THE physical therapy REVIEW

Volume 35 - Number 1 January 1955

Preparation for Professional Public Service — SEVERINGHAUS

Introduction to Clinical Application of Ultrasound — KUITERT and HARR

Cerebral Association Mechanisms — NIELSON

The Clinical Application of Electromyography at Cook County Hospital — OESTER, RODRIQUEZ, and CURRY

PUBLISHED MONTHLY BY
THE AMERICAN PHYSICAL THERAPY ASSOCIATION

Announcing...

THE Burdick®

ULTRASONIC
Therapy Unit

Years of Burdick research and experience have resulted in the development of this outstanding unit.

From controls to applicator, the UT-1 Ultrasonic unit is constructed to provide you the maximum in therapeutic efficiency, durability and safety — typical features of all Burdick equipment.

Write for complete descriptive literature.

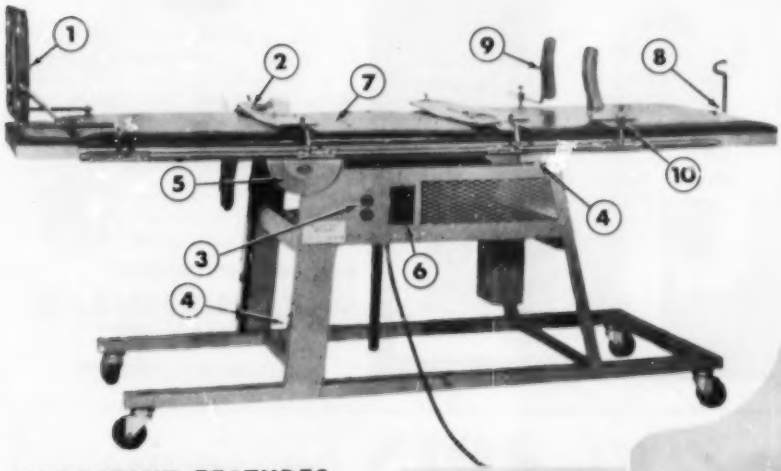
THE BURDICK CORPORATION
MILTON, WISCONSIN

NEW CONVENIENCE for the THERAPIST
BETTER EXERCISE for the PATIENT

La Berne

WALK-OFF

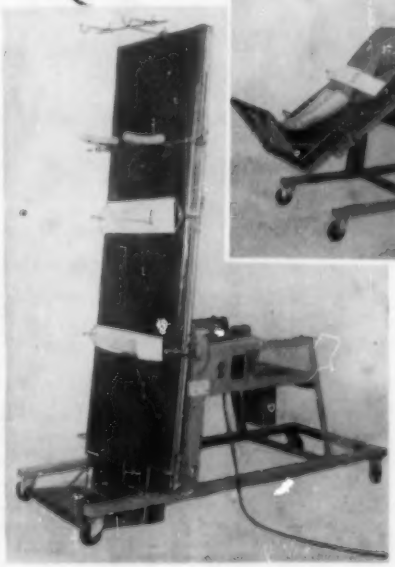
PHYSICAL THERAPY TABLE



IMPORTANT FEATURES:

1. Adjustable foot board
2. Adjustable restrainer straps
3. Push button switch
4. Safety switches
5. Calibrated dial for degree of tip
6. Receptacles for auxiliary equipment
7. Table top sponge rubber with easy-to-clean plastic cover
8. Adjustable cervical traction holder
9. Adjustable crutch
10. Crutch width adjustment
    Adjustable arm slings

Simple push button control adjusts table to any degree of tilt from .0 - 90°.



With the LaBerne Table patients can be handled by one attendant. A task that was formerly difficult even for a team. Patients benefit from more effective exercises, added confidence. Write for illustrated brochure to:

La Berne MANUFACTURING COMPANY
P. O. Box 5245, Columbia, South Carolina

EFFECTIVE
MOIST HEAT
EASILY APPLIED
HYDROCOLLATOR

Steam PACK

Everyone agrees moist heat is most effective in reducing spasm and pain. Now it can be easily and efficiently applied! Hydrocollator Steam Packs require no wringing, won't drip, are easy to prepare and handle. In use in leading hospitals and treatment centers.

ACCEPTED BY THE COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION (AMA)

WRITE FOR DESCRIPTIVE FOLDER

CHATTANOOGA PHARMACAL COMPANY, INC.
CHATTANOOGA 5, TENNESSEE

JOIN the satisfied list of users of

WHITEHALL
Hydrotherapy Equipment

ORIGINATORS OF ONE MOTOR MOBILE UNIT
U. S. PAT. 2255084

ACCEPTED COUNCIL ON PHYSICAL MEDICINE AMERICAN MEDICAL ASSOCIATION

One Motor Mobile Unit—The Whirlpool With Turbine Assembly That Acts As Both Agitator & Emptying Device . . . Empties Faster . . . Less Work For You

COMPLETE RANGE OF MODELS—
FULL BODY IMMERSION TANKS

Mail Coupon Today For Full Details—No Obligation

The Whitehall Electro Medical Co., Inc. PT
19 Wall Street, Passaic, N. J.

Please send me—without obligation—complete information on Whitehall Hydrotherapy Equipment.

Name.....

Address.....

City.....Zone.....State.....

For Humanity... for Country... for Self...

–serve as an Army Physical Therapist!

An Army career satisfies in *all* ways! It is satisfying for you professionally. As a part of your normal activity you have learning opportunities. These enable you to do the most for your patients by consistent improvement of your own skills. You also serve in fine, well-equipped Army hospitals.

And the work you accomplish benefits your country directly . . . because each soldier returned to duty strengthens the nation. That's why you begin your career as an officer among officers, enjoying equal standing and privileges with other Army professional people.

Your career is satisfying from every angle . . . personally as well as professionally. Travel, new friends and an officer's salary give you ample opportunity to broaden your horizons. And in addition to your other officer benefits, you enjoy a 30 day vacation with pay every year.

For a rewarding career, consider your future as an Army Physical Therapist.

Women's Medical Specialist Corps

U.S. ARMY MEDICAL SERVICE

FILL OUT THIS COUPON TODAY — PSS

The Surgeon General, United States Army
Washington 25, D. C.
Attn: Personnel Division

Please send me further information on my opportunities as a Physical Therapist in the United States Army.

☐ *Check if also interested in training opportunities.*

Name _____

Address _____

City _____ State _____

THE physical therapy REVIEW

4 Vol. 35, No. 1

published monthly by the
American Physical Therapy Association
at 1790 Broadway, Room 310
New York 19, N. Y.

Editor-in-Chief: E. Jane Carlin

Associate Editor: Beatrice Whitcomb

Assistant Editors: Helen Hislop, Mary E. Kolb, Kathryn Shaffer

Membership in the American Physical Therapy Association is $20.00 a year, including a subscription to THE PHYSICAL THERAPY REVIEW. Subscriptions for nonmembers to THE PHYSICAL THERAPY REVIEW, $6.00 a year; $6.75 in Canada and foreign countries. Single copies 75 cents. (50 cents to members.) Reentered on second class matter August 11, 1949, at the post office at New York, N. Y., under the act of August 24, 1912.

The statements in the manuscripts published in THE PHYSICAL THERAPY REVIEW are made solely on the responsibility of the author. The American Physical Therapy Association does not assume any responsibility for statements contained therein. Manuscripts accepted for publication in THE PHYSICAL THERAPY REVIEW are for exclusive publication and may not be published elsewhere without permission.

Officers

President ..... Mary E. Nesbitt
Vice-President ..... Lucille Daniels
Secretary ..... Dorothy Graves
Treasurer ..... Dorothy Hoag
Speaker, House of Delegates ..... E. Jane Carlin

Directors

Dorothy Fredrickson .....Nashville, Tenn.
Harriet S. Lee ..... Washington, D. C.
Sarah Rogers ..... New Orleans, La.
Mary Clyde Singleton ..... Warm Springs, Ga.

Advisory Council

Amos Christie, M.D. ..... Nashville, Tenn.
William T. Green, M.D. ..... Boston, Mass.
Charles C. Letourneau, M.D. .... Chicago, Ill.
Raoul Psaki, Lt. Col., MC . . San Francisco, Calif.
Aura T. Severinghaus, Ph.D. . . New York, N. Y.
Arthur Watkins, M.D. ..... Boston, Mass.

National Office Staff

Executive Director ..... Mildred Elson
Associate Executive Director .. Mary E. Haskell

Educational Services
Dorothy R. Hewitt
Helen Hickey Elizabeth MacAuley

Professional Services
Lucy Blair Ruth Whittemore

Table of Contents:

Preparation for Professional Public Service —Aura E. Severinghaus, Ph.D. 13

Introduction to Clinical Application of Ultrasound—Lt. Colonel John H. Kuitert, MC, and Major Emma T. Harr, WMSC . . . 19

Cerebral Association Mechanisms—J. M. Nielson, M.D. 26

The Clinical Application of Electromyography at Cook County Hospital—Y. T. Oester, Ph.D., M.D., A. A. Rodriquez, M. D., and F. V. Curry, M. A. 29

Editorials 34

Association Activities 35

World Confederation for Physical Therapy . 39

Conference 1955 43

Student Section 45

Physical Therapy Programs—1955 48

Abstracts 50

Book Reviews 53

Our Book Reviewers for Janua 56

Available in a Microfilm Edition

NOW . . .
MEDCO COMBINES BOTH SIMPLICITY AND UTILITY IN THE

Medcolator®

MODEL K

WITH

RECIPROCAL STIMULATION

$295.00

An adjunct therapy for sprains, strains, dislocations, other trauma of the muscle and skeletal system. The MEDCOLATOR Model K combines the Simplicity of Model 50 with the Utility of Model 508.

WRITE
For Your FREE
Pad Placement
COLOR CHART
For Wall Hanging

MEDCO PRODUCTS CO.
3603 East Admiral Place • Tulsa, Oklahoma

Medco Products Co.
Mail Address: P. O. Box 3275-P
3603 E. Admiral Pl. • Tulsa, Oklahoma

- ☐ Please send Pad Placement Color Chart.
- ☐ Please send MEDCOLATOR Model K with Reciprocal Stimulation for 30 day FREE trial.
- ☐ Please send descriptive literature on MEDCOLATOR Model K.

NAME_____

ADDRESS_____

CITY_____ STATE_____

Serving the Profession Since 1932

Vaso-Pneumatic

OPERATE DISTALLY:
To increase arterial blood flow.

OPERATE PROXIMALLY:
To increase venous and lymphatic return.

A series of quickly applied Neoprene cuffs are automatically inflated and deflated to produce a band of pressure that progresses up or down the arm or leg with a PERISTALTIC MOTION.

Usual treatment time 15 minutes.

Send for further information

POOR & LOGAN MFG. CO.
7319 VARNA AVE., NORTH HOLLYWOOD, CALIF.

Georgia Warm Springs Foundation

GRADUATE COURSE

Physical Therapy and Occupational Therapy
in the Care of Poliomyelitis

This course is open to graduates of approved schools of physical and occupational therapy. Such graduates must be members of the American Physical Therapy Association and/or American Registry of Physical Therapists, or American Occupational Therapy Association.

ENTRANCE DATES: First Monday in January, April and October.

COURSE I—Emphasis on care of convalescent neuro-muscular disease with intensive training in functional anatomy, muscle testing, muscle reeducation and use of supportive and assistive apparatus. This course is complete in itself.

COURSE II—Three months duration with Course I prerequisite. Emphasis on care of severe chronic physical handicaps with intensive training in resumption of functional activity and use of adaptive apparatus.

IN-SERVICE TRAINING PROGRAM—Fifteen months duration at salary of $225 per month plus full maintenance. This program includes training in Course I and II.

TUITION: None. Maintenance is $100 per month. For scholarship to cover transportation and maintenance for Courses I and II, contact National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York 5, New York. (Scholarships require two years of experience.)

For further information contact:

Robert L. Bennett, M.D., Medical Director

Georgia Warm Springs Foundation
Warm Springs, Georgia

TECA

one name for every need in low-volt therapy

You can always expect the important instrument developments to come from Teca . . . pioneers in the design of generators for low-volt therapy and electro-diagnosis. Teca units employ superior modern electronic circuitry, offer currents with minimal sensation . . . are unequalled for simplicity of operation, durability and efficiency. For complete details on the instruments shown, as well as utility units, hydro-electric, and special electro-diagnostic equipment, write today.

SP2 PORTABLE LOW-VOLT GENERATOR – affords complete flexibility in muscle stimulation and ion-transfer therapy – provides variable frequencies, variable surge rates and continuous DC. Effective stimulation with minimum sensation. Features simple operation . . . lifelong durability.

ELECTRO-DIAGNOSTIC INSTRUMENT CH3 (chronaxie, strength duration curves, R.D. Tests, etc.)–Eliminates tedious, time-consuming adjustments . . . affords complete operating simplicity and precision. Special new electronic control circuits (pat. pending) automatically compensate for instrument and patient variables . . . assures repeatable results!

SP5 TWO-CIRCUIT GENERATOR – compact, complete unit has impressive features found in larger Teca instruments–independent AC-DC or simultaneous use of both. Useful for denervated muscle treatment.

FOR THE SPECIALIST OR LARGE DEPARTMENTS
NEW IMPROVEMENTS – NEW FEATURES

CD4P TWO-CIRCUIT GENERATOR–Has AC and DC circuits . . . answers every low-volt therapy need. Provides pulse, sine and square stimulating current wave forms essential to a department using all phases of low-volt therapy.

CD7 TWO-CIRCUIT GENERATOR – the finest and most complete low-volt generator available.

TECA CORPORATION
80 MAIN ST. • WHITE PLAINS, N. Y.

GENTLEMEN:

- ☐ Send information on Model _____
- ☐ Would like demonstration of Model _____
- ☐ Send Low-Volt Therapy Booklet

NAME _____

ADDRESS _____

CITY _____ ZONE ____ STATE _____

BY _____

New complete portable generator

New ease and precision in electro-diagnosis

Ideal for office or hospital

DAKON

WHIRLPOOL TANKS

DAKON TANKS are available in many models, to completely cover the hydrotherapy field. Send for complete catalogue.

ELECTRIC TURBINE EJECTOR delivers 55 gallons of water per minute at a velocity of 3000 linear feet per minute. Built-in aerator mixes approx. 20,000 cubic inches of preheated forced air into ejected stream. Intensity of water and air may be varied from zero to maximum.

TURBINE EJECTOR ELEVATOR positions turbine at any level in tank, swivels from side to side.

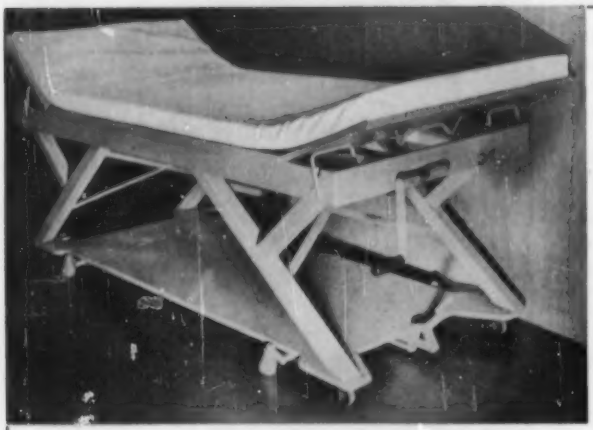
THERMOSTATIC WATER MIXING VALVE delivers up to 20 gallons per minute in temperature range from cold water to 110° F.

for complete information please write

EAST COAST
DAKON COMPANY
1836 Gilford Ave., New Hyde Park, N.Y.

WEST COAST
ROLAND J. GAUPEL CO.
1014 North La Brea Ave., Los Angeles 38, California

Illustrated, Model PST stationary arm, leg and hip tank.



YOUR DEPARTMENT—

IS IT A

HISTORICAL MUSEUM

OR IS IT

CLINICALLY MODERN?

EQUIP WITH **TERRY TABLES**

DESIGNED FOR **TODAY**

PHYSICAL THERAPY EQUIPMENT INC. 1706 Geddes Ave., ANN ARBOR, MICHIGAN

E & J . . . the chair that

adds the will

"Wheel chair shyness" often fades into a healthy will to try when the patient gets into a modern E & J chair. For comfort, handling ease, safety and beauty, you can recommend no finer chair than E & J.

to the way

There is a standard or custom model E & J chair for every handicap, in sizes ranging from "Tiny Tot" to rugged adult. A complete E & J catalog is yours for the asking.

EVEREST & JENNINGS, INC.

1803 PONTIUS AVENUE • LOS ANGELES 25, CALIFORNIA

ANNOUNCING

the New Medi-Sonar Portable

ULTRASONIC GENERATOR

This unprecedented new Model 1100 *PORTABLE* MEDI-SONAR Ultrasonic Generator is unquestionably the finest instrument available anywhere at any price. Its claim to *absolute superiority* rests in several extremely important factors, most of which are exclusive with Dallons. Its incomparable quality gives more dollar-for-dollar value... more power, better control, finer engineering. Price, complete $535.00 f.o.b. Los Angeles

Dallons 1st IN ULTRASONICS

- "Console" quality and output at "portable" prices.
- Guaranteed minimum output total of 20 watts—Actual output, not just rated.
- Larger precision-ground quartz crystal—10 sq. cm.
- Specially designed safety transducer.
- Dual-scale meter for "at-a-glance" direct reading of total watt output and watts per sq. cm.
- Stepless output control for accurate dosage duplication.
- Even distribution of energy at low temperatures in full cylindrical pattern.
- Resonance control for positive tuning under all conditions.
- All metal, well ventilated, case with protective cover.
- Written one year guarantee on both machine and transducer.
- Made under U.S. Patents, U/L inspected and approved, CSA approved, and Certified under FCC regulations.

For Professional Literature, Write

DALLONS LABORATORIES, INC.

5046 Santa Monica Blvd., Los Angeles 29, Calif.

S-T-R-E-T-C-H

SQUEEZE...

To strengthen the Fingers, Hands, Wrists, Forearms

GE SILICONE SPECIALLY PROCESSED FOR THERAPEUTIC USE

At Your Surgical Supply House or Write to Thera-Plast Co. for Literature.

Thera-Plast®

154 NASSAU STREET NEW YORK 38, N. Y.

AMERICAN PHYSICAL THERAPY ASSOCIATION CONFERENCE

June 19 to 24, 1955

N
W ← 1955 → E
S

ST. LOUIS, MISSOURI

PRESTON

A Complete Line

FOR PHYSICAL MEDICINE AND REHABILITATION

REHABILITATION: **Walking Parallel Bars and Exercise Staircases** of various designs; Posture Mirrors, single and triple; **Gymnasium Mats** in various thicknesses and coverings; **Bicycle Exercisers;** Restorator; **Progressive Resistance Exercise Units;** Quadriceps-Gastrocnemius-Footdrop Boots; Dumbbells; Indian Clubs; **Wall Pulleys;** Door Pulley Assemblies; **Guthrie-Smith Suspension Apparatus;** Stall Bars; **Shoulder Wheels** with height adjustment; Manuflex; Kanavel Table; **Sayre's Headslings;** Ankle Exercisers; Treatment Tables; Timers.

HYDROTHERAPY-ELECTROTHERAPY: **Whirlpools** for every use; Hubbard Tanks; **Paraffin Baths; Hydrocollator;** Shortwave Diathermy; Galvanic-faradic-sinusoidal Generators; Ultraviolet Lamps; **Infra-red Lamps and Bakers; Ultrasonic Generators.**

DIAGNOSTIC APPARATUS: Chronaximeters; Dynamometers; Goniometers; Oscillometers; Thermocouples and Skin Thermometers.

INVALID EQUIPMENT: **Everest & Jennings Wheelchairs;** Hollywood Wheelchairs; Commodes; **Walkers;** Patient Lifters; **Standing (Tilt) Tables;** Stretchers; Large selection of **Crutches and Canes.**

COMPLETE LINE OF CEREBRAL PALSY FURNITURE AND EQUIPMENT—SPEECH THERAPY—SELF-HELP DEVICES.

New Items of Interest

Literature Upon Request

Guthrie-Smith Universal Sling Suspension Apparatus, Standard and Portable Models; complete with all springs, ropes, pulleys, slings, etc. **$295.00**

Standing Table, manually operated; movable footrest; tilts up to 70°. Supplied with safety belts. Price including casters.. **$190.00**

Write for Free Copy of Illustrated Catalog No. 1054—Inquiries Invited

ALL your needs supplied by ONE reliable source

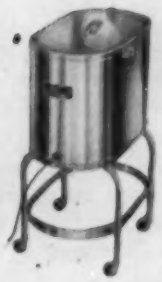
J. A. PRESTON CORP.
175 FIFTH AVENUE, NEW YORK 10, N. Y.

Precision Engineered by **ILLE**

FOR EFFICIENCY . . . ECONOMY

HM-1100

Combination Treatment and Wading Tank of stainless steel—for Subaqua Hydromassage and thermal therapy . . . complete with electric turbine ejectors and aerators, turbine carriages and elevators, thermostatic water mixing valve, dial thermometer, accessories and overhead carrier.



PB-110

Hand, Elbow, and Foot Paraffin Bath with Removable Stand — Stainless steel, double-wall construction . . . well insulated . . . thermostatically controlled electric heating.

ILLE

LITERATURE ON REQUEST

ELECTRIC CORPORATION • 50 MILL ROAD, FREEPORT, L. I., N.Y.

ON TOOTING ONE'S OWN HORN

The old saying goes that "If you don't, no one is going to do it for you."

Many, among the RN's, the Lab people, and even among the Medical Men in the hospital, consider your department a handy place to dump a fusty old chronic, hide a diagnostic or surgical error, dispose of terminal cases or recommend to your hands after the patient is surfeited with everything in the pharmacopoeia.

About two years ago I attended the American Urological Association meeting in Saint Louis. A friend, Chief of Urology in one of our major East Coast hospitals, a man nationally known in his specialty, visited with me in my room. During the course of our discussion he asked me what other conventions I attended, what else I manufactured aside from electrosurgical machines for Urology.

I mentioned Diathermy, Electromuscle Stimulators, Ultra-Violet, Ultrasonic Units, Hydrotherapy Devices, and that I always attended the American Congress of Physical Medicine—and that this meeting was especially important because I made contact with the men specializing in Physical Medicine and Rehabilitation.

Imagine my amazement and chagrin when he asked me, "Are those fellows MD's?"

This otherwise brilliant man was so uninformed that he did not know that in his own hospital there was a quite large, well equipped Department of Physical Medicine and Rehabilitation directed by a distinguished American Board Physiatrist and staffed with qualified physical therapists.

He knows better now because during the next hour he got from me in no uncertain terms the history of Physical Medicine, what it does and where, not to mention answers to the questions: "What is a Physiatrist and a qualified physical therapist?"

Well,—toot your collective professional horns. Don't stop with one toot. Let them know what you are and what you do and something of how you do it. Tell them once or a dozen times at every opportunity.

Soon your ranks will not only be enlarged, as is sorely needed, but your profession will gain its well earned recognition.

Did you know that a number of Approved Schools of Physical Therapy are now teaching the Student Therapist the subject of Ultrasonics and its clinical application?

Did you know that Ultrasonic energy is now employed in clinical application by about 10,000 American Physicians, in many Medical School Hospitals, Army, Navy and VA Hospitals, as well as in private Clinics and Offices?

Are you up to date on the subject? If you are a practicing RPT now, you didn't learn about Ultrasonics in school. Do you want some reprints on the subject? They are yours for the asking. Drop me a post card and I'll mail you a few.

Cecil Bircher
PRESIDENT

Birtcher
WORLD'S LARGEST VOLUME PRODUCER OF ELECTRO-MEDICAL-SURGICAL DEVICES
4731 Valley Boulevard, Los Angeles 32, California

The Physical Therapy Review

Official Publication of The American Physical Therapy Association

Vol. 35 **January 1955** **Number 1**

*Preparation for Professional Public Service**

Aura E. Severinghaus, Ph.D.

Health is assuming an ever-increasing place of importance in our national economy. "The total worth of any nation consists of its citizens and its national assets. The value of the citizen to his society depends upon the educational, health, moral, and spiritual resources which are available to him and the extent to which he makes use of these in his life.

Thus, each of us not only has a stake in our democracy and a concern for our own well-being and our own mental and spiritual growth; but we also have a stake in and a concern for the opportunities which others may have, and the extent to which they make use of them." [1] Intelligent action, good health, and a sound and high morale are the strength of a nation, and our nation will be strong in so far as each one of us achieves these qualities in his own life.

To those of us who work in the area of medical affairs, and to those who plan to join the ranks, there comes a special responsibility to see to it that our education and our sense of values will permit us to make a maximum professional contribution to the good health of our citizens. I wish, therefore, to direct our attention to the opportunities and responsibilities which a career in any of the professions related to the healing arts has to offer us. It would not be going too far to suggest that such a career demands rather than offers us a public trust for which we must prepare by developing the greatest possible competence.

In the development of this competence formal education plays a most important role. In fact, I presume that one reason why you may have invited me to be your speaker is that our committee has just completed a survey of preprofessional education in the liberal arts colleges of the United States. Now all people do not hold surveyors in such high regard. Quite recently an eminent liberal arts dean suggested that ours was an "era of undiscriminating allegiance to good causes, and a striking symptom is to be found in the recent popularity of educational surveys." This is what he has to say about surveys.

"I have lived through eleven (educational surveys) without noticeable improvement in myself or my neighbors. The surveyors are always from another state or another institution. This is in accordance with the well known principle that an expert is an ordinary person who is away from home. These outsiders are brought in because of their objectivity, objectivity being the capacity for discovering faults abroad which you cannot recognize at home. To be a good educational surveyor—or any kind of social analyst, for that matter—you must have a sharp

Associate Dean and Secretary of the Faculty of Medicine, Columbia University, New York.

* Opening address at the 31st National Conference of the American Physical Therapy Association June 28, 1954, Los Angeles, California.

eye for foreign motes but a dull one for domestic beams. You must be a contented extrovert," he concludes, "so that, after diagnosing the faults of others, you can continue to live in perfect comfort with your own." [2]

Perhaps we had better forget that I have had anything to do with an educational survey, and try to remember that we are all interested, intensely interested, in knowing how to acquire the best possible educational preparation for a professional career. Although education begins in earliest childhood and continues uninterrupted throughout life, I wish to direct attention to liberal education, which, in our system of education, reaches its climax in the last preprofessional segment of our total educational span of sixteen years; i.e., in the years which we are accustomed to spend in the liberal arts college.

Only a few months ago I attended a regional conference on liberal arts. The theme of this conference was "The Practical Side of the Liberal Arts." Now we may well ask, "Is there an impractical side to the liberal arts?" This question injects us at once into one of the most important and basic issues in higher education today; namely, the conflict between vocational training and liberal education. I raise again with you the question which I asked at this conference, "What shall it be—education for making a living or education for life itself?"

There are a number of important forces which are today shaping the pattern of your education and a brief look at them might be profitable. In the first place, we have, without question, become a most pragmatic people. Our colleges have not escaped the pressures of an expanding materialistic philosophy, hallmark of the first half of this century. Our chief concern seems to have been, and may still be, to keep our standard of living rising. And by this we mean more and better automobiles, faster trains and planes, the last word in radios, television, washing machines, dishwashers, refrigerators, air-conditioning plants, and calculating machines. We seem to be able to devise every conceivable gadget to banish toil, insure comfort, and to protect ourselves from those enemies who threaten to destroy what we have accomplished, and accumulated. Now I appreciate these laborsaving devices and enjoy the comforts as much as you do, but I fear at times we have the tendency to measure our progress by the abundance of our possessions, laying up "treasures where rust and moth corrupt and thieves break through and steal." This is what Macaulay meant when he wrote, "The objective of our technical age seems to be not to make men perfect, but to make imperfect men more comfortable."

It is small wonder then that the liberal arts colleges throughout the land should have found themselves under widespread public pressure to participate more and more in vocational training. The result has been the addition of scores of courses to the curricula which serve as little more than handmaidens to some vocation or profession. One does not need to search long on any campus to find both students and faculty members who believe that college courses which are not vocationally slanted are for the most part impractical.

The so-called "preprofessional" student finds himself under still another pressure. This is the understandable and almost irresistible pressure of early specialization in the sciences which are basic to the field of medicine. The almost miraculous progress which medicine has made during the past fifty years has resulted from the discoveries and the expansion of our knowledge in the natural and physical sciences. Under these circumstances how is one to justify spending more than the minimum of formal educational time and effort in any subject which will not directly contribute to the individual's professional competence?

It is my thesis that regardless of the area of professional activity which we propose to enter, a broad liberal education is basic to the development of professional competence.

It is to this question that we wish now to turn our attention. At the heart of our discussion must lie a serious attempt to discover what we mean by professional competence. What does the general public mean by professional competence? What are the qualities and qualifications which we expect our professional personnel to have? What kind of persons do we expect them to be? The contribution the liberal arts makes to our education should help us to be that kind of person, and any contribution which education can make to this end is highly practical.

I may be wrong, but I sense that in spite of the fact that the miracles of medical discovery have been successfully matched against the mystery of disease, the public is often vaguely dissatisfied with the professional treatment and care which he receives when he is ill today. As Professor Howard Taylor has said, speaking especially of the physician, it seems somewhat incongruous that in an era of medicine's greatest scientific triumphs, "the physician himself should be in danger of losing the people's faith . . . because they feel that he has often become

too commercial or too scientific, too busy or too preoccupied to concern himself with their problems." [3] Now, just as the scientific disciplines have the tendency to focus attention upon the subject matter rather than the student, so the scientific practice of medicine runs the risk of focusing upon the disease rather than upon the patient. We begin to treat sick livers instead of sick persons. Many are calling attention to this tendency and not only criticising the over specialized education of the modern doctor, and other personnel who join him in the care of the patient, but bringing all of them into sharp and unfavorable contrast with the beloved and time-honored practitioners of yesteryear.

During the past fifteen years in which I have been associated with the admission of men and women to the study of medicine, I have not infrequently been asked, "Why can't we get the type of men and women which we used to have in medicine?" I should not wish in any way to dim the halo which rests upon the head of the physician of the previous generation, but I believe that no finer body of men and women has ever entered the profession of medicine than is today being admitted to our medical schools. As the late Irwin Edman has said, "How bare and bleak and colorless we would be if our past did not persist, despite our efforts at erasure. And the first thing we know, the very yesterday we renounced turns up a golden age recollected. Sentimental memory plays havoc with all our fine renunciations." He then goes on to tell this delightful story. "A few years ago there was a mutiny in Dartmoor Prison in England. The Chairman of the Royal Commission was not a man to study conditions at second hand. He went down to the prison itself and interviewed, among others, one of the oldest inmates in the institution, one who had not been involved in the uprising. 'What brought about this mutiny?' he asked, 'Quite frankly, what? The food, the discipline, what?' 'Well sir', replied the old "lag" quite politely, 'I have been a member of this prison man and boy for forty years. I think, sir, I may properly claim to call this place my home. Now some says one thing, sir, and some says another, but' he said, lowering his voice, 'it's my belief, sir, we're not getting the stamp of man in 'ere we used to.'" We hope that in generations to come some one will look back upon us with all our frailties and shortcomings and say, "We're not getting the stamp of man we used to." [4]

What stamp of men and women does the public expect us to be? One thing is certain. We cannot set up standardized or ideal professional types. The field of patient care offers a diversity of professional opportunity, perhaps unequalled elsewhere. These varied areas of professional activity call for a variety of interests, skills and professional preparation. Yet regardless of the professional specialization every person should hope to be, and is expected by society to be a good husband or wife, a good father or mother, a good neighbor, a good citizen, who wins the respect and gratitude of his family and of his fellowmen, and at the same time lives with dignity, serenity and self-respect, good company even for himself.††

This is an attainment not casually achieved. One works at it from earliest childhood and continues to do so throughout life. Living and learning,—these two must go inseparably together. And what does one strive to achieve? In a measure, integrity, both personal and social, honesty so obvious and crystal clear that someone has recently referred to it as "transparent integrity," sound motivation, emotional stability, the satisfaction of working under one's own drive, capacity for growth, a passion for truth, selflessness, social sensitivity, tolerance of the differences among people, the ability to respond with imagination and creatively to changing situations, reverence for life and personality and for the dignity of man.

I am more and more convinced that the liberal arts college can through its various disciplines develop a broad general education which offers much to any person who plans to render health services to a patient.

But we do not enroll in a liberal arts college to be provided with these qualities so that we may then study to become successful practitioners. However, the years which we customarily spend in college are among the most critical and impressionable of our lives, and hence students bring to the college a unique opportunity and a heavy responsibility to assist them in reaching their objectives.

There are some who hoped that our recent survey of liberal arts education would provide an educational blue-print that the preprofessional student and the college could follow. This we had no intention of doing and it would have been impossible even if we had attempted to do so. But we have emphasized at least four basic academic ingredients of liberal education with which every student, including those who look

†† For an elaboration of this topic see Chapters 2, 5, 6, Preparation for Medical Education in the Liberal Arts College, Aura Edward Severinghaus, Harry J. Carman and William E. Cadbury, Jr., McGraw-Hill, New York 1953.

forward to a career in the medical arts, should be familiar. Time will permit me only to enumerate them. I leave you to expand them. In the words of Professor Theodore M. Greene, an active member of our survey committee, these are "(1) training in the accurate and felicitous use of *language*, as the essential condition of all reflection, self-expression and communication with others; (2) training in the acquisition of *factual knowledge* of *ourselves, our society* and other societies, the physical world, and ultimate reality so far as it is humanly knowable; (3) training in mature and *responsible evaluation and decision* in the controversial areas of (professional and) social policy, morality, art and religion; and (4) training in synoptic comprehension, i.e., in the escape from the multiple provincialisms which bedevil mankind and in the attainment of larger and more inclusive perspectives." (ibid. p. 85)

I have found myself again and again repeating this formula for education, each time more convinced of its soundness and wisdom, and each time more conscious that "we have left undone those things which we ought to have done, and done those things which we ought not to have done." To accept the importance of these four basic ingredients is a declaration in support of a broad liberal education as the best preparation for private living and professional public service.

It is obvious that this is not the job for the departments of science alone. "Each of the academic disciplines traditionally identified with the standard departments of our American college faculty, must, in its own way, concern itself with the essential skills of an educated person. Each discipline, on the other hand, does, or should, make a contribution of special value in one or another of these four regions." (ibid p. 86)

It is obvious also that this concept of preprofessional education completely rejects the idea that it is the chief concern of the liberal arts college to prepare for professional school. In our American system of education, which Clarence Faust has aptly referred to as "a patch work of historic accidents" it is too easy for the school and the student to regard each educational segment as a hurdle to be cleared in order to enter the next program of designated study. "I've got my college education out of the way. Now if I can be admitted to professional school and survive those years," you say, "I'll be done with this educational business and can get down to work."

James Hilton has recently called attention to the parent who unwittingly destroyed the equanimity of the incomparable Mr. Chips when he wrote in a letter to the schoolmaster, "After my son finishes his education he will enter my business." "Good heavens," exclaimed Mr. Chips, "does the fellow think that education is like the measles—something you get over while you are young so that you don't have to be bothered with it ever afterwards?"

Because I belong in the sciences myself, and because I fear someone may get the impression from what has been said that I underestimate the importance of science in professional training I must make it clear that I am not advocating, for example, the replacement of scientifically trained personnel by mere social scientists. Nor do I subscribe to the fallacy that breadth and culture belong to those who concentrate their efforts in the disciplines other than the sciences. A knowledge of science is as essential to cultural development as an awareness of the contributions of history, philosophy, and religion. The humble, probing, open-minded approach of science is liberalizing in itself and must be one of the foundation stones of liberal education. We should hold science and technology in high regard for the immeasurable contributions which they have made to society.

These contributions have been more subtle and profound than we often realize, for science has brought us not only the material comforts of a high standard of living but it has become a part of our way of life. How clearly Thomas Huxley saw this when in 1867 he wrote, "The whole of modern thought is steeped in science; it has made its way into the works of our best poets, and even the mere man of letters, who affects to ignore and despise science, is unconsciously impregnated with her spirit and indebted for his best products to her methods. I believe that the greatest intellectual revolution mankind has yet seen is now slowly taking place by her agency. She is teaching the world that the ultimate court of appeal is observation and experiment, and not authority; she is teaching it to estimate the value of evidence; she is creating a firm and living faith in the existence of immutable moral and physical laws, perfect obedience to which is the highest possible aim of an intelligent being."[5] This is a moving tribute to science. Were Thomas Huxley still with us today, he might question, as some of us do, whether he had not expected too much of science. Benjamin Franklin two hundred years ago was also so impressed with the progress science was making that he regretted having been born too soon.

But said Franklin, "O, that moral science were in as fine a way of improvement, that men would cease to be wolves to one another and that human beings would at length learn what they now improperly call humanity."

We also have little patience with those who would retard scientific research and technological advances on the ground that they have outrun the humanities, and social sciences. And so far as the field of medicine is concerned, the conquest of medical science over disease is only begun. The discoveries of the future are impatiently awaited. Devoted men and women, thoroughly educated in the sciences, must continue to join the ranks in the future as they have in the past. From among the science students in the liberal arts college today will come the Nobel-honored of tomorrow. But men and women entering the professions related to medicine today to take their places in the continuing conquest over disease and the improvement of patient care should know that "it is becoming more and more evident that the conflict of our times is a conflict in the realm of ideas, in the minds and souls of the peoples of the world." [6]

One hears not infrequently, that the sciences are "tools of trade" and that they are, therefore, the practical component of our education. With this view I wish also to take sharp exception. An acquaintance with the languages, the humanities, the fine arts, and the social sciences not only adds zest to living, equips us to make a worth while contribution to society, but it constitutes also an indispensable part of our professional "tools of trade." Sir William Osler had this in mind when he wrote, "The wider and freer a man's general education, the better practitioner he is likely to be, particularly among the higher classes to whom the reassurance and sympathy of a cultivated gentleman of the type of Eryximachus may mean much more than pills and potions. In no profession does culture count for so much as in medicine, and no man needs it more than the general practitioner, working among all sorts and conditions of men, many of whom are influenced quite as much by his general ability, which they can appreciate, as by the learning of which they have no measure." [7] What Osler has said of the physician applies equally well to all who render professional service to the patient. Now every academic discipline which enables us to widen our understanding, to broaden our sympathies, to increase our social, political and aesthetic insight serves immeasurably in the development of better rapport with the patient and with our colleagues. For successful therapy consists, not only of the administration of proper medicines or the application of proper technics. The first step is always the establishment of the patient's confidence, which will render therapy more effective and permit skilful teaching of the patient concerning his convalescence and the future maintenance of health.

We wish finally to point out that in the ingredients of education to which we referred as *mature and responsible evaluation and decision, and synoptic comprehension* we deal not only with matters of professional competence but with attitudes and values. It is in these disciplines among the humanities and social sciences which deal with these areas that you more readily relate the subject matter to yourself, and yourself to society. It is here that in realizing the complexity of the problems inherent in the functioning of our highly complex society, in attempting to relate the present to the past (history), and the part to the whole (philosophy, sociology), that you become aware of yourself and your relation to all human experience, past and present. It is here that you think seriously about attitudes and the rules of life.

Competence and attitudes—these are the twin-determiners of man's life—and it is the function of liberal education to assist every individual in the proper development of both. This does not mean that the college is expected to indoctrinate you by placing you in special assigned courses in which you can be handed a packaged set of values. "Virtue is not taught by prescription," cautions a recent educational report, but, the report continued, "there is no greater and important subject in the history of intellectual endeavor than the subject of what a man ought to do, and how he can tell what that is." [8] It is precisely here that the liberal arts often have a great opportunity to "give sharpness and meaning to the fuzzy impressionism of our untrained minds."

In spite of the most rigorous and careful selection of our students, few of us are satisfied with the attitude toward civic and social responsibility which many of our college and professional school graduates exhibit. They lack a sense of mission. They hesitate to use words such as "devotion," "dedication" or "vocation," which are among the noblest in our vocabulary. They feel that it is sentimental to regard one's life work as a "high calling" or that their abilities, while theirs, are nevertheless held in trust. I often remind medical students that the Oslers, the Grenfalls and the Albert Schweitzers shine as first-magnitude stars in the medical firmament.

I would hope that the liberal arts college would surround its students with an atomsphere in which they may mature in wisdom which not

only concerns knowledge but the use thereof. I would hope that the college could say to its students as they leave, what President Sharples said to the graduating class of 1838 at Haverford College: "I suggest that you preach truth and do righteousness as you have been taught, whereinsoever that teaching may commend itself to your consciences and your judgments. For your consciences and your judgments we have not sought to bind; and see you to it that no other institution, no political party, no social circle, no religious organization, no pet ambitions put such chains on you, as would tempt you to sacrifice one iota of the moral freedom of your consciences or the intellectual freedom of your judgments."

Competence and attitudes—in the continuing search for and the development of these, the liberal arts college offers its students an understanding and sympathetic home for a period of years, years in which, because they are freed of the distractions and complications of later life, they can concentrate upon the search. Their future happiness and their effectiveness as human beings, members of a profession and citizens in our democratic society depend in no small measure upon the foundation which they build at this time.

Bird fanciers have the practice of banding the members of their flock so that no matter where they may be found, frequently only after death, all will know to whom they belonged. But the Chinese have for ages followed a different custom. They attach a small bamboo flute to the back of each bird so that when he flies there issues an identifying note of ownership and when he flies together with the other members of his flock there is a melody of movement which swells into sweet harmonious chord.

Liberal education, the gift of the colleges to their students, like religious experience, the gift of God to man, should be like that. It is not enough to read in our obituaries, that we held a college degree, a professional certificate or a higher degree from some university.

Two things should happen to us while we are students. Through the disciplines we should find an introduction into our cultural inheritance whereby we become familiar with "the best that has been taught and said and done in the world." Through contact with devoted and inspiring teachers we should become henceforth different persons ourselves.

"Nobody," wrote Rufus Jones, "knows how the kindling flame of life and power leaps from one life to another. What is the magic quality in a person which instantly awakens faith? You listen to a hundred persons unmoved and unchanged; you hear a few quiet words from the man with the kindling torch and you suddenly discover what life means for you forever more, and you become forthwith another man, carrying, perhaps, your own torch." [9]

If our educational experience has been able to give to us these two gifts then we will move through the daily walks of life with the stamp which has been placed upon us, bearing witness that we belong to the family of cultivated and useful men and women.

If we prepare ourselves properly to meet the challenging opportunities and responsibilities which a professional career in the area of medical affairs will bring to us, then a life of rich reward will be ours.

REFERENCES

1. Severinghaus, Aura Edward; Carman, Harry J.; and Cadbury, William E. Jr.,: Preparation for Medical Education in the Liberal Arts College, McGraw-Hill, New York, 1953.
2. ten Hoor, Martin.: Education for Privacy, The American Scholar, vol. 23, p. 25, 1953-1954.
3. Taylor, Howard C., Jr.: Trends in Med. Ed. Com. Fund, Harvard University Press, Cambridge, Mass., 1948.
4. Edman, Irwin.: Under Whatever Sky, The American Scholar, vol. 23, p. 103, 1953-1954.
5. Huxley, Thomas.: The Culture Demanded by Modern Life, Youmans, Editor, 1867. Quoted from O. Howart Monorer, Liberal Arts Education at the Mid-Century, University of Georgia Proceedings of the Second Annual Conference on Liberal Arts, p. 51, 1953.
6. McCracken, Robert J.: Man's Right to Knowledge and the Free Use Thereof, Riverside Church, January 10, 1954, p. 11.
7. Osler, Sir William.: Aequanimitas with Other Addresses, the Blakeston Company, Philadelphia 1932.
8. Report of a committee composed of members of the faculties of Andover, Exeter, Lawrenceville, Harvard, Princeton, and Yale, General Education in School and College, Harvard University Press, Cambridge, Mass., 952.
9. Jones, Rufus: The Luminous Trail.

Introduction to Clinical Application of Ultrasound

John H. Kuitert, Lt. Col., MC, and Emma T. Harr, Major, WMSC

Historical Development

The first reported attempts to introduce ultrasonic energy in medical treatment can be traced to Mulwert and Voss in 1928, when they attempted its application in certain types of deafness. The systematic use of ultrasound massage* was introduced in physical therapeutics in Germany in 1937. Previously, Wood and Loomis published a paper, *Physical and Biological Effects of High Frequency Sound Waves of Great Intensity*, in 1927. This work must be considered as the start of biological research on ultrasound. Today, the number of publications on this challenging subject approaches several thousand.

Ultrasound massage has now been abundantly applied for therapeutic purposes in the continent of Europe, England and the Commonwealth countries, and the United States. An increasing number of research investigations on the biological action and effects are being conducted in prominent clinics, laboratories, and medical schools both in the United States and foreign countries. The first recorded use of this form of energy in an Army Hospital was reported by Lt. Col. John H. Kuitert in 1953 (figure 1).

Basic Review of Physics of Sound

The word, 'sound,' as used in physics and physical therapeutics is defined: "To make a noise or sound; cause to make a noise; utter audibly." Thus, this form of mechanical energy is known for its effect on the organ of hearing, and is in fact a vibration of air or other media. Vibrations of sound waves having a frequency above the hearing range of the human ear are, by definition, known as ultrasound waves. This arbitrary classification includes all sound waves having a frequency of vibration above 16,000 per second; when used in medicine today, the commonly employed frequency of the wave is between 0.8 (800,000) and 1.0 (1,000,000) megacycles. The term 'supersonic' is now reserved for the designation of speed of travel in excess of the speed of sound in air.

When a body vibrates, i.e., moves to and fro within a limited distance, in air or in some other medium, it sets up a form of vibratory mechanical motion which radiates outward from it in straight lines through the molecules of the medium. Vibration in physics is thus a kind of motion first in one direction and then back again in the opposite direction. It is exhibited by the swinging pendulum, the prongs of a tuning fork when struck, the string of a musical instrument that has been plucked, or the movement of molecules of any body of matter. Sound in physics is considered to be the waves of vibratory motion themselves, whether or not they are heard by the human ear. When a violin string is plucked, its movement in one direction pushes molecules of air before, crowding them together; when it moves back again past its original position or to the other side, it leaves behind it a nearly empty space. At the same time, the molecules which were at first compressed have transmitted some of their energy of motion to other adjacent molecules and are now returning to fill again the space originally occupied and now left empty by the retreating violin string. Thus the vibratory motion produces a compression of molecules, i.e., condensation alternated with a thinning out of molecules, or rarefaction. Taken together, the phases of condensation and rarefaction make up the sound wave, the frequency of which determines its audibility (audio-frequency). Such

Lt. Col. John H. Kuitert, Chief, Physical Medicine Service, Brooke Army Hospital and Physical Medicine Branch, Department of Professional Sciences, Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Texas.

Major Emma T. Harr, Chief, Physical Therapy Section, Physical Medicine Service, Brooke Army Hospital, Brooke Army Medical Center, Fort Sam Houston, Texas.

Read at an instruction seminar of the Texas Chapter of the American Physical Therapy Association, San Antonio, Texas, April 24, 1954.

* The authors' use of the term 'ultrasound massage' is descriptive of the Foman technic of application as applied and utilized in a physical therapy clinic, and should not be confused with the current concept of massage.

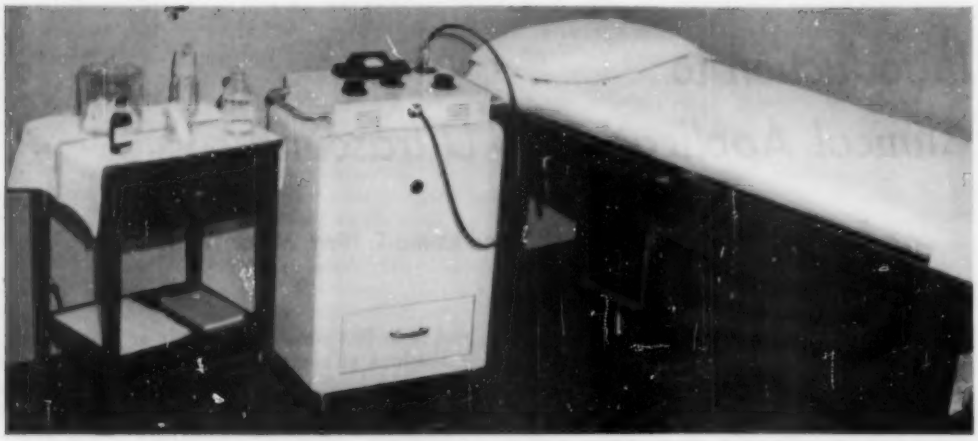


Figure 1. Ultrasound Treatment Facilities

vibratory motion is called a *longitudinal* wave because the motion is to and fro along the direction of travel of the wave. This is a difference from a light wave in which the vibratory movement is a transverse motion at right angles to the direction of travel of the waves. Another difference is the fact that a light wave travels through a vacuum while a sound wave requires a medium for travel. The heating effect of the sound wave is an inevitable effect if it is recalled that heat is commonly defined as the kinetic energy of molecules in motion; i.e., the energy of their continuous vibratory movement.

The wave length depends upon the velocity of sound in a given medium at a given temperature and upon the frequency of vibration. The velocity of sound is not constant and varies in different media, and in the same medium at different temperatures. It travels more slowly in gases than in liquids and more slowly in liquids than solids. Thus, the ability to conduct the sound wave is directly proportional to the density of the medium of travel. Sound waves can be reflected, refracted, and absorbed. The intensity of the wave depends upon the extent to which the source of the wave vibrates, or the amplitude of vibration. Ultrasonic waves obey the same laws of acoustics and physics as do the waves of audible sound.

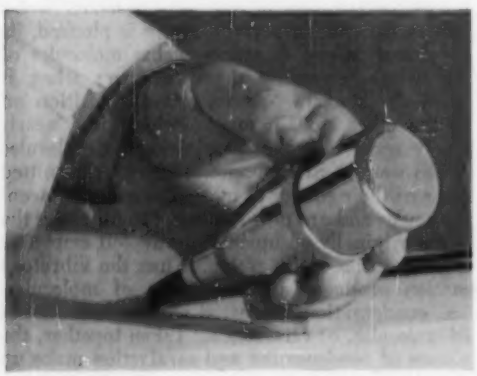


Figure 2. Close-up of the Sound-head

Sources of Ultrasound Waves

The piezoelectric effect is the natural phenomenon manifested in various crystals, especially those of quartz and Rochelle salt, whereby mechanical pressure exerted upon the crystal results in the production of an electrical charge along the surface of the crystal. The converse effect, or distortion of the crystal, is achieved by the application of an electrical charge to its surface. This distortion of the crystal causes it to vibrate at its natural frequency, thus generating a wave of motion. Crystals are employed for their piezoelectric effect in medicine for frequency control, in microphones as oscillators, and in ultrasound generators.

The piezoelectric effect of the crystal is utilized as an ultrasound wave source by causing it to vibrate when it is energized by a high frequency oscillator similar to a conventional short wave diathermy. The similarity between the diathermy

and ultrasound generator ends here, with the source of power. The 'heart' of the ultrasound generator is the sound head sometimes called the 'transducer.' (figure 2) It consists of a crystalline quartz plate of predetermined dimensions, encased in a shielded applicator with a metallic face which may be operated in direct contact with the surface of the part of the body to be treated. Ultrasound energy is emitted only from the face of the treatment head which must be in constant, direct, intimate contact with the surface of the area being treated, since the slightest layer of air between these surfaces is a barrier to the transmission of the wave, makes the application ineffective, and when allowed to persist, will shatter the vibrating crystal through the reflected 'echo' effect.

Reflection of some of the sound energy occurs when the ultrasound waves reach the boundary of the medium through which they are travelling. It is obvious that when a solid-to-air boundary is reached, almost all the high frequency sound energy is reflected, since it is incapable of being transmitted through air or other gases in any appreciable amount.

Biological and Physiological Effects of Ultrasound Energy

The ultra sound wave is a physical force with intricate and peculiar properties and problems which demand constant cooperation and teamwork between physician and physicist with clinical and experimental backgrounds. Physical therapeutics was once based on the radiation energy of the electromagnetic spectrums as used in the various diathermy and microwave therapies and light therapy. There is now available another distinctly separate physical energy as represented in the spectrum of the acoustic, including mechanical vibrations such as the ultrasound wave.

The total possibilities of physiological reactions in living tissues are limited. The differences in physical energies do not necessarily result in qualitative differences of tissue reactions, but it may be assumed that basic differences between electrical and mechanical energies initiate qualitatively different responses in the organism subjected to them. The ultrasound wave carries relatively high power to relatively small areas, making it an energetic force with mechanical effects of acceleration and pressure change. These effects are very brief, reversing direction each millionth of a second at a frequency of one megacycle, a time too short to permit permanent biological reaction.

The possible effects of ultrasound energy have been reported as biologic, chemical, mechanical, physiologic, and thermal (Nelson, Herrick and Krusen). Known mechanical effects include aggregation, cavitation, dispersion and emulsification (Wakim). Chemical effects include depolymerization, hydrolysis and inversion of sugar, luminescence and oxidation. Biologic effects have been observed since the early work with this energy, and include injurious and lethal effects on experimental organisms, disruption of tissue, vesiculation of skin, and destruction of growing bone; histologic changes seem to be due to selective heating (Harbert, Treavor and Herrick).

Dosage Determination

There is as yet no established dosage for ultrasonic energy, but the dosage for therapeutic purposes should be limited. Ultrasound dosage depends on intensity and time, and the product of these factors is usually expressed as watt-minutes. Intensity of sound energy available from the sound head (transducer) is usually expressed as watts per square centimeter of the energized surface. Therapeutic intensities of 0.5 to 2.0 watts per square cm. have been found most useful in our hands. We have not exceeded 2.5 watts per square cm. in any case. Larger doses may be used when the stroking technic is employed than when the stationary technic is used. We have commonly employed a *combination* of stroking and stationary technic in treatment of our patients. Under-water treatment demands greater treatment intensities because of absorption and reflection. Pain is a distinct warning that local intensity is too great. Treatment time is progressive, beginning at 5 minutes and increasing to a maximum of 15 minutes per treatment area. A treatment series is now considered to be 6 to 12 applications, and is applied daily consecutively whenever possible. An arbitrary interruption of two weeks is interposed between treatment series when it is necessary to repeat the treatments. General criteria helpful in determining dosage for the individual patient include the following:

(1) Acute conditions require sedation provided from low intensity treatment.
(2) Chronic indolent conditions require stimulation provided from higher intensity treatment.
(3) Deep-seated lesions require greater *initial* intensity treatment.
(4) Extensive body surfaces require longer

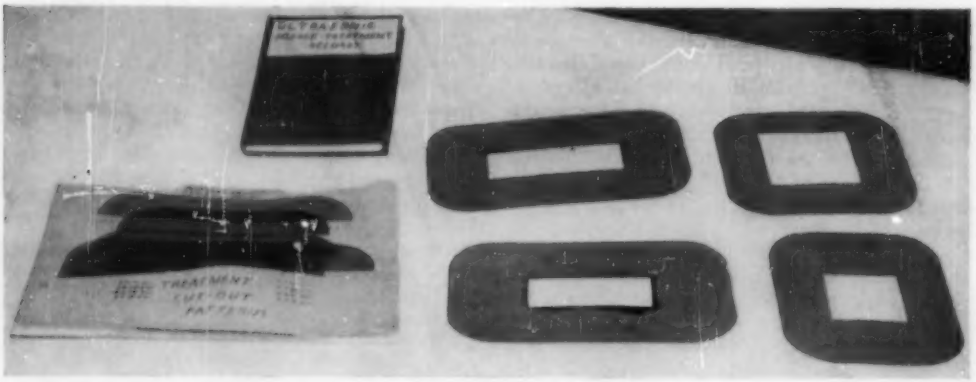


Figure 3a. Cut-out Patterns

treatment time since not all the tissue in the area is treated simultaneously.

(5) Under-water treatment commonly requires higher intensities.

Total dosage is controlled and concentrated by outlining the skin area to be sounded. The total skin area is thus easily determined by use of a series of rectangular or square cut-out patterns of predetermined size, and sound massage is confined to such areas. Total dosage is thus easily computed for record purposes.** (Figures 3a and 3b)

Technics of Application

More detailed accounts of the construction of the generator are available through the manufacturers.† Briefly, an electrical current or charge applied to the surface of a quartz crystal will cause the crystal to vibrate at its natural frequency, or that of the current. While the *frequency* of the vibrations remains constant, the *intensity*, in terms of amplitude, can be controlled by turning the power control knob to the desired setting thus increasing the power output.

There are several types of reliable commercial generators in use today.† Our generator has the usual frequency of 1000 kilocycles, and a capacity of from 0.1 to 3 watts through a 5 square centimeter sound head. The total energy delivered from the head in this machine is recorded on a computing meter, providing the entire head is in contact with the conductive medium.

** See reference 4.

† The generator presently in use in our clinic is the Birtcher Ultrasonic Therapy Unit.

Coupling Media

The transmission of sound depends upon the density of the medium transversed, and since air is not of sufficient density and ultrasound waves are of such high frequency, they pass through air with difficulty. Therefore, some type of coupling or conductive medium is necessary. In the *direct method*, any oil of high viscosity, such as liquid paraffin, Vaseline, mineral or castor oil, lanolin, or KY jelly applied directly to the patient's body will act as the binding agent when the treatment head is pressed lightly against the skin surface. This method, in effect, "squeezes out" the intervening air. (Figure 4)

The *indirect method* utilizes the fact that ultrasound waves pass freely through water, and by immersing both the part to be treated (if this is feasible) and the treatment head in a container of water, transmission of sound waves from the sound head to the affected part is accomplished. There is some loss of energy in this method, but it is effective with higher power settings of ultrasound.

Massage Motions Employed

The sound field immediately in front of the quartz crystal shows maxima and minima of pressure and intensity. When the sound head is stationary, the tissues within its field are thus exposed to contrasting intensities. Moving the sound head insures a uniform distribution of energy, and in addition, obviates the necessity for pin-pointing accurately small targets such as nerves, ganglia, or blood vessels.

There are various motions employed in the

Figure 3b. Outlining Treatment Areas

application of the sound head to the part to be treated. The *circular method* is a form of ultrasound massage in which the treatment head is moved in small overlapping circles. The intensity of current introduced into an area is necessarily increased in direct proportion to the diminished size of the area, and the volume of power has to be reduced accordingly.

The *stroking movement* may also be used. Like the circular method, this is a form of ultrasound massage in which the sound head is applied lightly and moved steadily to and fro at a speed of approximately four inches per second. (Figure 5)

The *stationary method* calls for an intensive knowledge of regional anatomy, since the intensity is at its maximum, and there is some evidence that the stationary technic produces undesirable tissue destruction.

When using water coupling technic, the area to be treated is immersed in water, and the sound head, similarly immersed, is kept at a distance of from one-half to one inch from the part being treated (Aldes and Jadeson). When the sound head is moved slowly through the water, maintaining the correct distance from the part, a greater area may be treated.

Treatment Precautions

Certain precautions must be observed. When the direct method is used, the sound head must remain in contact with the part at all times to

Figure 4. Application of Coupling Media

insure an even spread of intensity. In the case of under-water treatments, air bubbles may collect on the surface of the sound head, on the patient, or both, and prevent the passage of the sound waves. When bubbles are observed, they must be wiped away.

Positioning the Patient

Whether the patient is positioned prone,

Figure 5. Ultrasound Treatment Employing 'Moving Head' Technic

supine, side lying, or sitting, is up to the discretion of the operator. The patient's position is dependent upon the area being treated. In general, the following considerations apply:

(1) The patient should be comfortable, and as relaxed as possible. This applies equally to the operator.
(2) The area being treated should be conveniently placed and exposed so that good contact may be maintained throughout the treatment, and so that control of the sound head is easy for the operator.
(3) The placement of the machine is important. When the operator is unassisted, the machine must be placed so that the operator can easily manipulate the controls with one hand, as he watches the watt meter.

Various anatomical areas and characteristics may require special technics. The large muscular areas such as the shoulder, back and proximal portions of the extremities lend themselves unusually well to the direct method of treatment. There are no difficulties encountered unless the area is extremely hairy, in which case the generous use of mineral oil to force out air bubbles and facilitate an even gliding motion is indicated. Bony areas, or areas of irregular contour, such as the ankle, toes, elbow, and fingers will require the indirect underwater method.

PATIENT DOSAGES

Specific dosages are prescribed by the physician in charge of the patient. The maximum power output of three watts per square centimeter of crystal area is the total operating range of the generator. Low intensities are considered to be those between 0.5 and 1.0 watts per square centimeter.

Much can be observed from the patient's reaction while treatment is given. He should feel no pain or discomfort. Sense of burning, tingling, or pain indicates the treatment dosage is too intense. This may result from (1) either not moving the treatment head fast enough; i.e., staying too long in one spot and building up intensity; or (2) too great a power output. In the first case, the remedy is to move the sound head away from the area of discomfort; in the second, reduce the power setting of the generator.

Pain may be considered as the natural line of defense against too high dosages. It is well to recall Arndt's Law, which says in essence that weak stimuli excite physiological activity, moderate ones favor it, strong ones retard it, and very strong ones arrest or destroy it. In general, it is well to begin with low dosages, and increase progressively in time and intensity.

RECORDS OF TREATMENT

Since this is a comparatively new modality, and much still remains to be learned about it, we will facilitate our acquisition of facts by keeping adequate records of treatments. These should include:

(1) The patient's diagnosis.
(2) A written statement of the prescribed initial dosage, and any subsequent change therefrom.
(3) A record of the patient's reactions, and any significant changes during the total course of the treatment.
(4) The total number of treatments given, and an evaluation of the patient's final condition in terms of intensity of pain and/or range of motion.

Such a record, carefully kept, will be an invaluable aid in compiling scientific data on the use of ultrasound therapy.

CLINICAL INDICATIONS FOR USE

Muscle disease and symptomatology is of special concern to the physiatrist and the physical therapist. The therapeutic role of ultrasonic energy in the management of muscle disease requires further study (Gersten). The principal reported results include relief of muscle pain, muscle spasm, and restoration of range of movement.†† Other conditions of special concern because of their tendency to chronicity include bursitis, capsulitis, fibrositis, and periarthritis. Subdeltoid and other forms of bursal disease have been a special problem in which ultrasound massage aids in relieving local edema and decreasing hypertonicity of large muscle groups (Aldes, Jadeson and Gravinski). It is not safe to assume that there is a special 'list' of indications for the use of this form of energy; rather it should be regarded as another tool in physical therapeutics, a tool the employment of which is based on thorough clinical consideration and study of the patient. It is misleading to list disorders by diagnosis as indications when the employment of ultrasound massage may be used with good effect in a patient suffering a disorder in a given stage, and be quite useless for another patient with the same disease under different conditions.

†† See references 12 and 13.

CONTRAINDICATIONS

Growing bone, the eye, the lower cervical sympathetic ganglia, the heart, the genital glands and pregnant uterus are avoided as a rule of thumb when ultrasound massage is employed. Anesthetic areas are avoided except by deliberate intent, and ischemic tissues and vascular lesions are approached with special caution.

COMPLICATIONS

No complications have been encountered in the clinical use of this form of treatment in our hands. Skin erythema and superficial burns have been reported (Grynbaur), and are usually the result of a break or error in technic of application.

SUMMARY

The historical development of ultrasound is briefly recounted. The physics and physical therapeutics including the technic of application of this form of energy are reviewed. Clinical effects, together with indications for the use of this form of mechanical energy, are stated. Details of treatment technic, including positioning of the patient and use of the sound head, have been described in detail. The indication for use of clinical records has been stated. We have noted clinical benefit from the use of ultrasound massage in selected patients suffering from arthritis, bursitis, capsulitis, fibrositis, myositis, and periarthritis.

CONCLUSIONS

Ultrasonic energy is a definite adjuvant in the management of selected musculoskeletal and allied conditions. There is no established dosage for this form of treatment at the present time. Dosage factors must be carefully controlled by the persons entrusted with the responsibility of this form of therapy. This form of treatment is of sufficient potential effect and force to warrant special orientation, medical supervision, and special training in technics. We regard ultrasound therapy as a useful addition to the armamentarium of physical therapeutics. We should like to stress the fact that because of the importance of the coupling effect, the physical therapist must be constantly occupied with the treatment. Total treatment must be thought of as more than mere mechanical preoccupation with the generator and the sound head. The physical therapist, by virtue of his constant presence, has an unparalleled opportunity to establish the closest kind of rapport with his patient. This is significant since the role of the psyche is as important as the soma today. The benefits to be derived from this type of association are apparent to all of us.

BIBLIOGRAPHY

1. Mulwert, H., and Voss, 01: 12:63, Acta oto-Largng. Stockholm, 1928.
2. Pohlman, R.: Lassen sich durch ultrachall therapeutische wirkunge erz ienten? 15:187, Forsch. U. Fortschritt, 1939.
3. Wood, R. W., and Loomis, A. L.: 29:373, Physiol. Rev. 1927.
4. Kuitert, John H.: Ultrasonic energy as an adjunct in the management of radiculitis and similar referred pain, 33: 61, Am. J. Phys. Med., 1954.
5. Universal Graphic Dictionary—Webster (Pelo) International Press, 1930.
6. Nelson, P. H., Herrick, J. F. Krusen, F. H.: Temperature produced in bone marrow, bone and adjacent tissue by ultrasonic diathermy—an experimental study, 31: 687, Arch. Phys. Med., 1950.
7. Wakim, K. G.: Special review—ultrasonic energy as applied to medicine, 32: Am. J. Phys. Med., 1953.
8. Harbert, E. H., Treavor, W. J., and Herrick, J. F.: Effects of heat and ultrasound on conduction in bullfrog nerve, 10: 78, Federation Proc., 1951.
9. Bauer, Albert: Technique of ultrasound therapy, 14: 7, Brit. J. Phys. Med., 1951.
10. Aldes, John H., Jadeson, Walter J.: Ultrasonic therapy in the treatment of hypertrophic arthritis in elderly patients, 6:9, 545-550, Ann. West. Med. and Surg., 1952.
11. Gersten, W.: Ultrasonics in muscle disease, 33: 68, Am. J. Phys. Med., 1954.
12. Friedland, F., Besgrove, J. G., and Doyle, B. J.: Therapeutic application of ultrasound energy, 33: 461, Arch. Phys. Med., 1952.
13. Bauer, A. W.: Technique of ultrasonic therapy, 14: 145, Brit. J. Phys. Med., 1951.
14. Aldes, John H., Jadeson, W. J., and Gravinski, S.: A new approach to the treatment of subdeltoid bursitis, 33: 79, Am. J. Phys. Med., 1954.
15. Grynbaur, B. B.: An evaluation of the clinical use of ultrasonics, 33: 75. Am. J. Phys. Med., 1954.

1955 National Health Forum

Place: Hotel Sheraton Astor
New York City

Time: March 23-24

Sponsor: National Health Council

Subject: Forecasting America's Health

Roscoe P. Kandle, M.D., deputy commissioner of the New York City Department of Health, is chairman of the Forum Committee. Dr. Kandle says, "We do not expect to become prophets but we do expect to get down to brass tacks on how prophecies are made."

The Forum program will offer featured speakers and an opportunity for general discussion. The American Physical Therapy Association is a member of the National Health Council and all members are cordially invited to attend. Watch the *Review* for program details.

Cerebral Association Mechanisms*

J. M. Nielson, M.D.

Cerebral association mechanisms are resident in the association areas of the cortex. These association areas differ in function radically from those which are sensory or motor. They are placed between those two. They are devoted to thoughts, language, ideas, beliefs, opinions, analysis, and wisdom. The most important functional differences between the association areas on the one hand and motor or sensory cortex on the other, is that the association areas receive their information about the body itself and the external environment from the sensory areas and, after due thought and consideration, decide for the person what is to be done before it allows the motor mechanism to carry out his wishes. The association areas are the masters, the others the servants. In addition, our knowledge in general is stored in the form of memories in the association areas on both sides of the brain so that if a large clot occurs on one side and paralyzes the motor mechanism for the other side of the body, the patient's knowledge is not lost; it still resides on the other side. It is for this reason that the patient who has lost power of language because of a blood clot or a tumor is not an idiot; he knows, as a rule, all that he knew before and merely cannot express his knowledge or cannot understand language.

It is the enormous development of the association areas in the human being which differentiate his mentality and therefore, his behavior, from that of animals. Consider for a moment the difference between a rhinoceros and a man when they have a chance meeting. Each recognizes the other as a probable enemy. The rhinoceros has two choices—to leave the vicinity immediately or to charge. The man has many choices. He will consider concealment, waiting for developments, seeking temporary refuge in a tree, taking time for consideration, entrapment, seeking a place for a good shot, immediate shooting, etc.

There are various association areas, each essential to a given function. As the name implies, however, the association areas associate one area with another and it is impossible for any area to perform its function if isolated. For that reason, one must never say, "This function resides in this association area." One must say, "This association area is essential to this function."

It is my task at this time to outline the functions of the various association areas. They are discussed in relation to the lobes of the brain in which they occur.

I. Occipital lobes—vision

The occipital lobes are in the posterior portion of the brain. When a visual impulse attains to the occipital cortex it does so on the mesial surface in a large area known as the area striata. This is not an association area but a projection area for perception of light and no memories reside in it. We know this is so because no visual memories are lost when area striata is bilaterally destroyed.

Immediately adjoining area striata is area parastriata which is essential to recognition of objects seen. Memories are formed in it by means of neuronal (cell) patterns. If area parastriata is destroyed bilaterally (or in some persons, on one side only) the patient is no longer able to recognize what he sees. All his familiar scenes, even his loved ones, are strange to him. He is therefore lost in his home, does not recognize his food, his clothing, or his friends. If only one side is destroyed he can be educated again to recognize everything he sees.

Juxtaposed to area parastriata is another, larger area, called area peristriata. It is devoted, not to recognition, but to visual recall, revisualization of former images. If it is destroyed on both sides or on the major side, the patient cannot recall visual images in his mind of his home, his friends, or anything else he has seen. A street map does not help him because it is only a network of lines; he cannot form his own visual image of the streets. If area peristriata is stimulated with an electrical current of proper degree, the patient sees images before him on

Clinical Professor of Neurology, University of California at Los Angeles.

*Presented at the Annual Conference of the American Physical Therapy Association, Los Angeles, June 1954.

the side opposite that stimulated. It is with this area that we dream and, if psychotic, have visual hallucinations.

II. Temporal lobes

The temporal lobes, located anterior to the occipital lobes and at a level just above the ears, are much larger than the occipital lobes. There are several functions to which the temporal lobes are essential, the most important being recognition and interpretation of spoken language and the formulation of good grammar and rhetoric.

On the upper surface of the temporal lobes, deep in the sylvian fissure, are found irregular gyri known as the transverse gyri of Heschl. In the first of these is found the first cortical station for auditory impulses. If the transverse gyri are destroyed on one side, there will be only a little dimunition of hearing in both ears because auditory fibers go from each ear to both temporal lobes. However, if the gyri of Heschl are destroyed bilaterally, the patient is completely deaf and he can never recover. On the other hand, he can still remember how spoken language sounds.

If those transverse gyri are left intact but the upper temporal convolution (Wernicke's area) just lateral to them on the left side (in right handed persons) is destroyed, the patient cannot *recognize* spoken language. He has auditory aphasia, or more specifically, he has auditory verbal agnosia. He will still be able to recognize music, sounds of bells, horns, and the usual street noises because the other temporal lobe can function in that regard.

Below, anterior and posterior to Wernicke's area, there is a large mass of temporal lobe cortex devoted to thought processes and memories, comprehension of spoken language and formulation of spoken and written language. Irritation of this area by tumors or by an appropriate electrical current gives rise to auditory hallucinations or makes the patient recall old memories. Tumors may provoke psychomotor epileptic attacks and even scars may do so in the anterior portion. The anterior 2 inches of the temporal lobes may be removed (bilaterally) without producing loss of memory, or aphasia but destruction of the posterior portion is much more productive of severe defects. Destruction of the posterior portion of the major side leaves the patient unable to find words to express himself. He has amnesic aphasia and cannot formulate language.

On the inner margin of the temporal lobe is a gyrus called the hippocampal gyrus. Irritation of it causes olfactory hallucinations but removal of it does not cause anosmia. It has much to do with the emotional life of the person and with formation of memories. Its destruction bilaterally results in dementia.

III. Parietal lobe

The parietal lobe extends upward from the temporal lobe to the vertex, anteriorly to the frontal lobe and posteriorly to the occipital lobe. It is divided into an upper, superior parietal and a lower, inferior parietal lobule. The extreme anterior portion of the parietal lobe is made up of the postcentral gyrus which serves for recognition and accurate appraisal of stimuli of general sensation. By means of that gyrus and the superior parietal lobule one identifies an object held in the hand or fingers by touch alone. This is done by accurate detection of temperature, hardness or softness, weight, size, or texture. Loss of its function is known as astereognosis.

Behind the postcentral convolution the inferior parietal lobe is divided into two portions, an anterior supramarginal gyrus and a posterior angular gyrus. The two have entirely different functions. The supramarginal gyrus is essential to keeping the opposite side of the body in awareness. If the right one is destroyed the patient forgets the left side of the body or has the positive feeling that it is absent. He will say, "Of course I know a person cannot live with only half of the body but it sure feels like it." Patients with such a lesion between the thalamus and the supramarginal gyrus have been known to look on the floor for the supposedly absent member or to complain that somebody's dead arm was across their chest. If the trouble continues for weeks they usually come to the realization that the offending arm belongs to their bodies.

The angular gyrus has another function entirely. It is essential to the recognition and to recall of written symbols. If it is destroyed, the patient cannot read or write because he can neither recognize what he is trying to read nor recall how written matter should look, if he wanted to write. In right handed persons, it is the left angular gyrus which is important. After its destruction, the right can be trained in a year or two through reeducational procedures.

If a lesion below the cortex does not destroy but only separates the angular gyrus from the occipital lobe, the patient nevertheless can write because the essential gyrus still has its anterior connections; however, he cannot read what he himself has written.

IV. FRONTAL LOBES

The frontal lobes are the largest lobes of the brain and extend from the anterior extremity back to the parietal lobes. While the posterior one-third is devoted to motor functions, the larger portion is made up of association areas. The association areas are almost homogeneous so far as cortical cellular distribution is concerned and seem to function as a unit.

Removal of the anterior frontal lobes causes the patient to lose his initiative, his judgment and wisdom, as well as his creative ability. He no longer is loyal to his responsibilities or to his own best interests. He becomes impulsive in his behavior and does not properly plan for the future or execute whatever plans he does make.

If the lobes are merely undercut or if only the white matter is destroyed by a surgeon, the defect is not nearly as great but is still disabling for creative work or for responsibilities requiring good judgment and wisdom.

If only one frontal lobe is removed or undercut the patient is far less disabled and may in fact, usually continue an occupation on a relatively low level.

One highly specific area in the postero-inferior portion of the frontal lobe is Broca's convolution. It is essential to pronunciation of words and language in general. Its destruction leaves the patient mute until he can be retrained by virtue of the other side of the brain.

V. REHABILITATION

With respect to the association areas of the brain, the general rule applies that if one area is destroyed the homologous one on the other side can take over the function and thereby bring about restitution. That statement, however, does not apply to astereognosis since the parietal cortex is specific, each for the opposite hand.

Aphasia can be overcome by systematic retraining. The various types of aphasia differ in their recoverability, however, and the order of recovery of function after complete aphasia is as follows:

1. Comprehension of spoken language.
2. Motor speech.
3. Reading.
4. Motor writing.
5. Language formulation.

Recovery depends on a number of factors as follows:

1. The patient must want to recover.
2. He must have a good homologous speech area on the minor side to train.
3. He must have sufficiently good general health to undertake the task.
4. He must have sufficient time left. This usually means two years—and if his heart, blood vessels, or kidneys cannot continue, or if he has malignancy in his system, he may not have two years at his disposal for recovery.
5. The younger the patient, the more he applies himself to the task and the better the guidance and instruction he receives, the sooner he will recover.

YOUR Photo Contest Entry

will help meet APTA needs and

may win $50.00 for you

The necessity for building up our depleted photograph files cannot be over-emphasized.

Do your share by sending in photographs illustrating your professional work. They will be used in local and national recruitment.

TRIPLE YOUR CHANCES OF WINNING BY ENTERING 3 OR MORE PHOTOS

Contest entries must be in the mail not later than January 15th.

Send in all the good photos you have and those which do not meet the entry requirements will be put to other use.

American Physical Therapy Association

1790 Broadway **New York 19, New York**

The Clinical Application of Electromyography at Cook County Hospital

Y. T. Oester, Ph.D., M.D., A. A. Rodriquez, M.D., and F. V. Curry, M.A.

Electromyography is playing an increasingly important role in the over-all program of physical medicine and rehabilitation at this and other general hospitals. The program in Physical Medicine at Cook County Hospital encompasses occupational therapy as well as physical therapy. Electromyography serves as an aid in diagnosis and prognosis, in setting up a rational program of physical medicine in both the physical and the occupational therapy units, and in determining end point of treatment.

Electromyography is the study of the intrinsic electrical activity of muscles during rest or activity. Such potentials are measured in terms of thousandths or millionths of a volt, and in thousandths of a second. The apparatus we have used for recording these potentials consists of a needle inserted into the muscle with an adjacent surface electrode. These leads are coupled to an amplifier and fed into both a cathode ray oscilloscope and an audio output. The electrical potentials can thus be seen on a screen and heard on a loudspeaker. The audio portion may be recorded continuously on a tape recorder and both portions, audio and visual, reexamined leisurely.

Normal muscle at rest gives rise to no electric potentials. When stimulated, either by physical means or voluntarily, normal muscle tissue gives rise to so-called "motor unit action" potentials (figure 1, A). These are usually diphasic or triphasic spikes (occasionally more complicated) varying in amplitude from 500 to 2000 microvolts, and in duration from 2 to 10 milliseconds. The motor unit potential represents the electrical output resulting from the synchronous discharge of the component muscle fibers in the motor unit.

Denervated muscle, on the other hand, gives rise to so-called "fibrillation action" potentials. These are spontaneous monophasic or diphasic spikes up to 300 microvolts in amplitude and from 0.5 to 2.0 milliseconds in duration (figure 1, C). Such potentials repeat spontaneously and often irregularly. They are due to spontaneous repetitive contractions of individual fibers, and usually appear 14 to 20 days after a lesion leading to denervation. They may be present for years in a denervated muscle.

Muscle undergoing reinnervation gives rise to a decreased number of fibrillation potentials. As regeneration progresses motor unit action potentials appear. At first these may be of small voltage and highly polyphasic (figure 1, B). Such polyphasic potentials, called nascent units, may appear on an average of eight weeks before any signs of clinical recovery; hence, they are of distinct prognostic value.

Generally, electromyography is carried out concurrently with reaction of degeneration electrodiagnostic tests. The latter are done as a screening procedure. Patients showing no findings of reaction of degeneration are not considered candidates for electromyography. Experience has shown that neither test, alone, gives as complete or as satisfactory findings as when both are run concurrently. If carried out singly, in certain cases, either the reaction of degeneration test or electromyography may give results which are inconclusive. In most instances, however, electromyography will provide the most definitive data. Examples of this will be noted in cases which are to follow.

Within a period of six months, this department has provided electromyographic information on 40 patients. These patients include referrals from neurology, neurosurgery, orthopedics, medicine, and pediatrics, in addition to referrals made directly by the physiatrist. Some patients were referred for aid in diagnosis only, while others were available for follow-up studies during the course of their illness. The latter was particularly desirable, since the information obtained in this way was used to direct therapy more efficiently. Thus, patients with favorable electromyographic findings in a particular an-

From the Department of Physical Medicine, Cook County Hospital, Chicago, Illinois
Y. T. Oester, Ph.D., M.D., Acting Chairman, Department of Pharmacology, Stritch School of Medicine of Loyola University, Chicago.
A. A. Rodriquez, M.D., Associate Professor (Physical Medicine), Stritch School of Medicine of Loyola University, Chicago.
F. V. Curry, M.A., Director of Physical Therapy, Department of Physical Medicine, Cook County Hospital, Chicago.

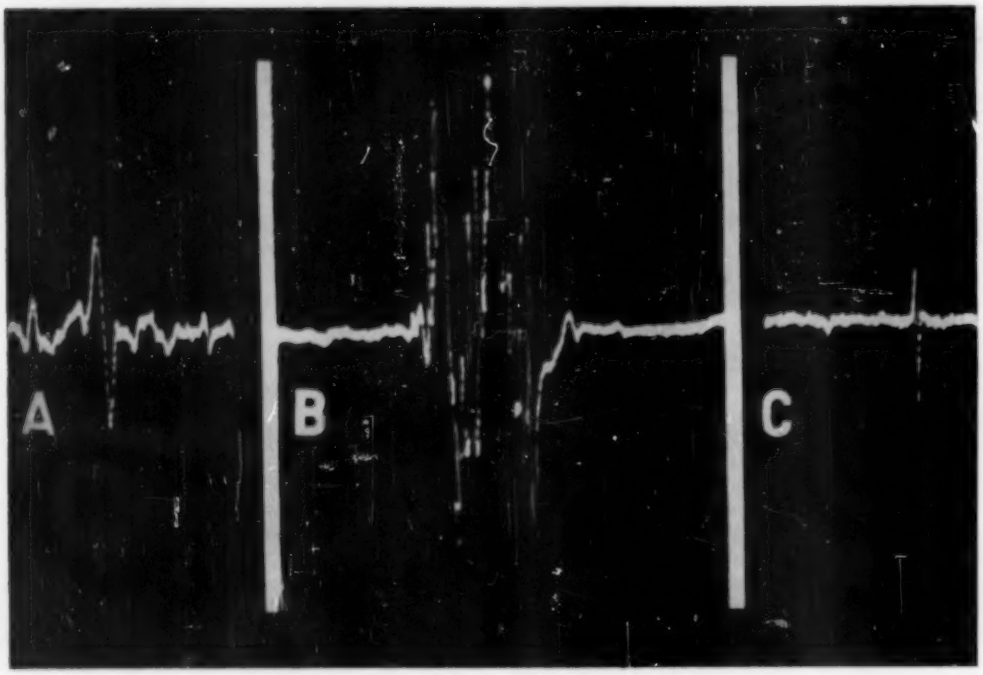


Figure 1. Typical Electromyographic Potentials
A. Normal Motor Unit
B. Polyphasic Motor Unit
C. Fibrillation Potential

atomical area could receive emphasis on muscle reeducation and facilitation measures, while patients with less favorable findings could receive less emphasis in such areas.

The several ways in which electromyography has served this department are:

1. Aid in diagnosis of neuromuscular disorders-peripheral nerve injury.
2. Aid in prognosis and in planning treatment.
3. Providing evidence of progress or lack of it and determining end point of treatment.
4. Aid in planning exercises and in muscle reeducation.

Electromyographic studies and reaction of degeneration tests were done on all injuries in which such studies seemed indicated. The wide variety of peripheral nerve injuries seen in this department during the past six months included two Bell's palsy, three brachial plexus cases, three radial nerve injuries, one ulnar nerve injury, three combinations of median, radial and ulnar injury, one musculocutaneous injury, five peroneal and tibial injuries, and four polyneuritis cases.

Etiology in these cases included: compression, tourniquet paralysis, traumatic severance, knife and gunshot wounds, infection, poliomyelitis, and dietary deficiency such as avitaminosis.

During a similar period there were several types of central nervous system abnormalities referred to the department of physical medicine and rehabilitation for aid in diagnosis and/or treatment. In the general group of neuromuscular disorders were infectious arthritis with irritation, herniated nucleus pulposus, sciatica, transverse myelitis, spontaneous cerebral hemorrhage, spinal cord transection, dermatomyositis, myasthenia, myotonia, and other muscular dystrophies.

The final place of any procedure used in the treatment and diagnosis of disease must necessarily be based on its usefulness in a practical situation. To show the utility of electromyog-

raphy, several cases have been selected to illustrate three general areas in which electromyography has proven useful: 1) diagonsis, 2) prognosis, and 3) therapy.

CASE REPORTS

Case 1.

Patient V. C. had right gastrocnemius muscle weakness, rated as a trace by manual tests, two years following acute poliomyelitis. The history of no recent improvement indicated a need for objective prognostic data. Electromyography showed no generalized fibrillation, no significant abnormal motor units, and many normal motor units under voluntary control. On the basis of these findings, rather than abandonment of treatment, an intensive program was initiated emphasizing therapeutic exercise and facilitation technics. Increase in muscular strength was slow during the first several months. A follow-up electromyographic study indicated improvement. Further emphasis on facilitation and reeducation measures brought about an increase in strength sufficient to give the right gastrocnemius a rating of fair plus. In this case, electromyography aided in prognosis as well as preparing an effective prescription of physical treatment.

Case 2.

Electromyographic studies made on cases of Bell's palsy contributed significantly to diagnosis as well as prognosis. Patient A. S. had developed a complete left facial nerve paralysis following strong concussion to the region of the left facial nerve. No other precipitating factor was noted. Treatment consisted of support of the paralyzed facial muscles with an adhesive sling. This was coupled with a departmental program consisting of infra-red irradiation and electrical stimulation three times weekly. Reaction of degeneration test revealed no response of nerve or muscle to faradic stimulation. Good response was obtained to galvanic stimulation, however. Three months later, clinically, only faintest traces of function had returned. In view of these findings and the prolonged period of recovery, electromyography was carried out. The muscles sampled, the orbicularis oris and orbicularis oculi, gave no evidence of fibrillation. Some polyphasic motor units and many normal appearing motor units were seen. This electromyographic information indicated a satisfactorily recovering facial nerve paralysis and a good prognosis. Follow-up studies revealed continued slow, but steady progress with response to faradic stimulation returning late in the history of recovery, approximately seven months after onset.

Case 3.

A 38 year old white male, J. C., was seen with radial nerve paralysis of two months duration. This occurred as a result of a deep laceration to the upper arm. The reaction of degeneration test applied to muscles supplied by the radial nerve, gave good response to both faradic and galvanic current. It was felt that this was a normal response. Electromyography, however, showed that there was a small, though significant, partial lesion to the radial nerve. A few fibrillation potentials (evidence of some Wallerian degeneration) and many normal motor units were found in the electromyographic studies of extensor digitorum communis and extensor carpi radialis muscles. From the reaction of degeneration test alone one would conclude that there was no Wallerian degeneration, and that prognosis for rapid and complete recovery was excellent. After electromyographic studies, however, when the picture was more complete, we had to conclude that prognosis was good for only *partial* recovery. The recovery for the portion of the nerve with Wallerian degeneration was slower to appear and a more guarded total outlook prevailed.

Case 4.

Patient J. K., a 36 year old white male, was seen 14 days following a tourniquet paralysis of the left radial, ulnar, and median nerves. A reaction of degeneration test to the muscles supplied by these nerves gave a partial reaction of degeneration with all muscles responding to increased dosage of faradic stimulation. These findings indicated a prognosis for quick, complete recovery; however, electromyographic examination of the extensor carpi ulnaris disclosed only fibrillation potentials. Only a few (only one or two) polyphasic low voltage motor units under voluntary control were found in the flexor carpi ulnaris. Widespread fibrillation was found in all other muscles examined. Because of these conflicting reports, follow-up studies were made. A chronaxie of 0.2 sigma was found for the extensor carpi radialis and a 0.3 sigma for the flexor carpi ulnaris. These findings supported evidence supplied by the reaction of degeneration test.

Four weeks later the patient developed voluntary control in these muscles. A repeat electromyogram at this time continued to show widespread fibrillation, but also many motor units under voluntary control in these muscles. The patient experienced rapid return of strength and function in all of the muscles involved under a progressive program including electrical stimulation, reeducation and facilitation technics, and active resistive exercises. The value of the reaction of degeneration test was shown in this case. In the recovery phase, however, the electromyographic findings were of much greater significance. Such a case as this illustrates the importance of performing both procedures.

SUMMARY

Electromyography is playing an active part in the department of physical medicine and rehabilitation of this large general hospital. It has provided useful and often crucial information in all of the areas served by this department, including neurology, neurosurgery, orthopedics, medicine, and pediatrics. Electromyography has been shown to be useful in at least three general areas:

1. Prognosis and progress
2. Diagnosis
3. As a facilitation procedure in therapy

Brief case reports have been presented to illustrate these areas of usefulness.

There is a wide variety of clinical problems referred to this department for electromyography. The most effective information can be obtained if electromyography and reaction of degeneration tests are carried out concurrently.

BIBLIOGRAPHY

1. Weddell, G., Feinstein, B., and Pattle, R. E.: Electrical Activity of Voluntary Muscle in Man Under Normal and Pathological Conditions. Brain 67:178, 1944.
2. Huddleston, O. L., and Golseth, J. G.: Electromyographic Studies of Paralyzed or Paretic Muscles in Anterior Poliomyelitis. Archives of Physical Medicine 29:92, 948.
3. Huddleston, O. L., Golseth, J. G., Marinacci, A. A. and Austin, E.: The Use of Electromyography in the Diagnosis of Neuromuscular Disorders. Archives of Physical Medicine 31:378, 1950.
4. Denny-Brown, D.: Interpretation of the Electromyogram. Archives of Neurology and Psychiatry 61:99, 1949.
5. Shea, Paul A., Woods, Ward W., Werden, Delbert H.: Electromyography in Diagnosis of Nerve Root Compression Syndrome. Archives of Neurology and Psychiatry 64:93, 1950.

"Three To Make Ready" New Rehabilitation Film

"Handicapped Oscars" were awarded October 27, 1954 to two seriously handicapped young people for outstanding performances in a new dramatic documentary motion picture film, "Three to Make Ready," which had its premiere at the New York Academy of Sciences before an audience of rehabilitation authorities and members of the professional and general press.

Six-year old Joseph Mastrovito, paralysis victim of 38-29 Harper Avenue, and Dorothy Donnelly, teen age cerebral palsy patient of 2065 Hermany Avenue, both in New York City, received the awards from Bruce Barton, advertising executive, columnist and President of the Institute for the Crippled and Disabled, where the film was made.

Joseph and Dorothy were rehabilitated at the Institute. In "Three To Make Ready" they perform the difficult task of portraying their own rehabilitation over a two-year period.

The "Handicapped Oscars," officially known as the Institute's Valor and Achievement Awards, are 18-inch high golden statues depicting the victory of the handicapped over their disabilities through rehabilitation. A graceful human figure holds aloft in one hand a symbol of triumph, while, the other hand appears to be discarding a crutch. This is the first time that the awards have been made.

"Three To Make Ready" is a 45-minute, 16 millimeter, sound and full color motion picture film which shows, perhaps for the first time, the full scale operations of a total rehabilitation center. Its purpose, according to Willis C. Gorthy, Director of the Institute for the Crippled and Disabled, is to provide communities, government agencies, colleges and universities, organizations and institutions with a better understanding of the effectiveness, limitations, and organization of total rehabilitation.

In the film, the work of physicians, psychiatrists, psychologists, vocational teachers and counselors, case workers, physical and occupational therapists, and many other specialties, is shown in a client-centered approach to the problems of the handicapped.

Three case histories are utilized to tell the rehabilitation story in dramatic form. The first is that of a youngster afflicted with a serious childhood disease. The second is that of a teen age girl suffering from cerebral palsy, a birth injury. The third account is of a man, head of his family, who has an industrial accident which makes it impossible for him to continue working at his present job.

As each case unfolds, the problems, hopes and aspirations of the patient and his family are revealed. Then, the work of the many professions and skills of rehabilitation are shown as they go to work. The unity and team work of a total rehabilitation staff is shown as they quietly but dramatically discuss the obstacles and achievements with each patient.

Throughout the film there is a strong sense of realism which comes from having actual handicapped people portray themselves. While almost 100 people appear in "Three to Make Ready," it was found necessary to use only one professional actor. He plays the role of "Mike," industrial accident victim, since that role, based on an actual case history, called for a portrayal displaying considerable emotion.

Prints of "Three To Make Ready" will soon be available for distribution throughout the free world, according to Mr. Gorthy. They may be purchased, or rented for a small fee, in color and black and white. Inquiries should be addressed to the Institute, 400 First Avenue, New York 10, N.Y.

Training Program for Rehabilitation Center Directors or Administrators

Place: Institute for The Crippled and Disabled, New York City.

Starting Date: January 1, 1955. Delay in recruiting, however, may postpone starting date until February 1, 1955.

The Training Program: In collaboration with the Office of Vocational Rehabilitation, Washington, D. C., the Institute for the Crippled and Disabled is conducting a 7-month program designed to train persons to coordinate the services and administer the activities of rehabilitation centers.

The training will consist of an initial period at the Institute, followed by three on-the-job placements of selected rehabilitation facilities. Between placements, trainees will return to the Institute for a discussion of their placement experiences and to continue instruction in specific subjects pertaining to administration. The final two weeks of training will be devoted to a review of all subjects covered.

All phases of rehabilitation center administration will be covered during the periods the trainees are at the Institute. Trainees will be given specific work assignments during the training period.

Standards for Selection of Trainees

Sex—Men or women will be accepted. *Age*—Not less than 30 years. *Education*—Bachelor's degree—minimum.

Experience—Applicants should have had at least three years' experience in rehabilitation and its constituent fields including physical therapy.

Personality attributes—Trainees should possess such personality attributes as: feeling for leadership, personal stability, resourcefulness, tact and effectiveness. If practicable, applicants may be given a personal interview by a rehabilitation center administrator before acceptance for the course.

Stipend—A stipend of $250 per month for the 7-month period will be paid to each trainee. Travel expense between New York City and the locations of on-the-job placement centers will be paid by the Institute. All other expenses will be borne by the trainee.

Applications or inquiries should be submitted to:

The Director, Institute for The Crippled and Disabled, 400 First Avenue, New York 10, N. Y.

Index to Current Literature

Surgical Treatment of Meniere's Disease. David E. Brown, J. Indiana M.A., 47:977-981, September 1954.

Psychodrama as a Teaching Aid. John S. Pearson and Mildred J. Skalitsky, J.A. Dietet. A.30,876-880, September 1954.

Treatment of Fractures of the Surgical Neck of the Humerus in the Aged. Robert M. O'Brien, Geriatrics, 9:406-408, September 1954.

The Successful Treatment of Diseases of the Respiratory Tract by Continuous Postural Drainage and the Prevention Thereby of Recurrent and Chronic Affections. L. Bedford Elwell, Dis. Chest, XXVI:338-348, September 1954.

Testing for Muscle Weakness in Poliomyelitis. Edward B. Shaw, G.P. X:48-50, September 1954.

Advances in Inhalational Therapy. Gustav J. Beck, Hylan A. Bickerman and Maxwell J. Marder, G. P. X:51-60, September 1954.

Some Problems of the Newborn. Warren W. Quillian, G.P., X:61-65, September 1954.

The Management of Heart Disease in Pregnant Women. C. Sidney Burwell, Bull. Johns Hopkins Hosp., 95: 130-142, September 1954.

Histologic Studies Following Exposure of Bone to Ultrasound. Leonard F. Bender, Joseph M. Janes and J. F. Herrick, Arch. Phys. Med. & Rehab., XXXV:555-559, September 1954.

Changes Occurring in Patellar Reflex and Electromyographic Voltages in Paretic Quadriceps. George H. Koepke, James W. Rae, Jr., Alma J. Murphy and Arthur L. Drew, Arch. Phys. Med. & Rehab., XXXV: 572-577, September 1954.

The Alternating Pressure Pad: An Aid to the Proper Handling of Decubitus Ulcers. W. James Gardner, Ruth M. Anderson and Michael Lyden, Arch. Phys. Med. & Rehab., XXV:578-580, September 1954.

Evaluation of Red Cross Gamma Globulin as a Prophylactic Agent for Poliomyelitis, W. McD. Hammon, et al. J.A.M.A. 156:21-27, September 4, 1954.

The Anesthesiologist, The Poliomyelitis Team, and The Respirator. W. A. O'Brien, A. E. Scott, R. C. Crosby, and W. E. Simpson, J.A.M.A. 156:27-31, September 4, 1954.

Mechanical Hip Extensor. L. N. Rudin and D. I. Cronin, J.A.M.A. 156:35-36, September 4, 1954.

Simple Knee Cage Brace. P. Lewin, J.A.M.A. 156:314, September 25, 1954.

Editorials

As we progress in our professional work, our interests and efforts tend to become channeled in one or more areas, namely, administration and supervision, clinical practice, research or teaching. Whichever the area chosen, special study and training are needed for full realization of our goal. It is with administration and supervision that this editorial is concerned.

Administration and supervision cannot be divorced from physical therapy in that their aim is directed toward improvement in patient care, more effective performance and utilization of personnel and improved education, and training of students and staff members. Good supervision sustains a unity of purpose and a coordination of effort which contribute to the growth of all.

In spite of the volumes of literature on leadership and human relations, many of our physical therapists in charge tend to take their human relations responsibilities all too much for granted. As Elton Mayo, recognized educator of Harvard University, has stated "While the material efficiency has been increasing for 200 years, the human capacity for working together has in the same period continually diminished." When as much time and thought are spent in trying to understand the patterns of behavior which are found in work situations as are spent on the more technical aspects of our profession many problems will be eased in our hospitals.

Some persons get into administration and supervision because they performed other jobs well. Excellent performance in physical therapy, however, is no criterion for supervisory competence. It is not necessary that the physical therapist in charge be the most skilled in the particular work he is supervising, but it is essential that he be a good leader. It is now agreed generally that leaders are either born or made. Some outstanding leaders seem to have an instinctive ability to draw people to them and to influence them to cooperate toward some goal which they find desirable. Others, whose careers are equally outstanding, started with shy retiring personalities, and, through observation, self discipline and long practice, have mastered the art of leading. There is not the slightest doubt but that the quality of leadership can be improved by training.

The necessity for leadership training has long been accepted by the Armed Forces, the Church, Education, the Government and Industry. Most fields requiring large numbers of persons well-equipped for directive positions have systematic training programs in effect. It has been demonstrated that haphazard training is ineffective and over costly. All too much of the training for supervision in the past has been based on superiority in technical knowledge and skill. Experience has proved that this is not enough. Recently a greater emphasis has been placed on training for supervision through training for leadership.

Literature on leadership and supervision has been directed almost entirely to assisting the male leader in typical work situations. Prior to the twentieth century, leadership was so rarely demanded of women that special problems faced by them are only now crystallizing. Leadership for women has become a social problem almost within the present generation. Because the transition is slow, women are not accepted everywhere with confidence nor are they used to their fullest capacity. Ironically enough, women leaders usually become victims of more management pitfalls when dealing with members of their own sex than when dealing with men. No matter how well she knows her job or how devoted she is to her responsibilities, the woman leader faces psychological hazards in leading other women which she must recognize and to which she must adjust her thinking. Since physical

therapy is a profession with well over two-thirds of its membership comprised of women, the necessity is evident for a study into the psychological hazards which have been assembled by reliable industrial investigations and confirmed through questionnaires filled out by women in many fields.

The woman contemplating assumption of supervisory responsibilities must evaluate her own long range objectives. Leadership, regardless of the sphere in which it is practiced, follows a general pattern which has been set by our own society. If the physical therapist selects the leadership role, she will gain in prestige, her talents will find room for expansion and she will gain in personal and professional relationships. But she must also be prepared to lose certain freedoms of behavior and peace of mind. Her hours will be irregular, her personal pleasures and choices curtailed, and even her physical strength and good spirits strained to their limits at times. Women leaders should be selected on the same basis as are men leaders. They should be recognized as newcomers to the field of leadership and be assisted in their difficulties as a minority group. Systematic training in leadership for the woman who expects to occupy a supervisory position will determine to a great extent her success.

Finally, regardless of sex, if you have been placed in a supervisory position or aspire to such a position, do not take your leadership qualities and supervisory practices for granted. As much study and effort must be devoted to the art and science of leadership and of human relations as are expended on the more technical aspects of physical therapy. Until more of our graduate professional schools make available in their curricula electives in such subjects as administration, conference leadership, counseling and guidance, human relations, leadership and supervision, organization, personnel evaluation, and personnel psychology, physical therapists will have to rely solely upon workshops and institutes conducted by the American Physical Therapy Association and other professional organizations, on-the-job training, and independent study.

Association Activities

Hospital Institute

The Institute on Physical Therapy conducted by the American Hospital Association and the American Physical Therapy Association in Chicago, November 15-19, 1954, was an outstanding success according to the more than 100 students and faculty from 27 states, the District of Columbia, and Canada. Students included physical therapists, four physicians, and seven administrators.

Many factors contributed to the success of the Institute—the know-how of the American Hospital Association staff led by Dr. Charles Letourneau, Secretary of the Council on Professional Practice; the cooperation of the Institute Advisory Committee, composed of members of the Illinois Chapter; the faculty of experts; and the enthusiasm of the students.

The keynote of this five-day Institute can be found in the stated objects of the two cooperating Associations.

> American Hospital Association—"To promote the public welfare through the development of better hospital care for all the people."
>
> American Physical Therapy Association—"To foster the development and improvement of physical therapy service and physical therapy education through the coordinated action of physical therapists, allied professional groups, citizens, agencies, and schools to the end that the physical therapy needs of the people will be met."

Highlights of the course in addition to presentations from hospital administrators, physicians,

and members of other allied professions were the papers given by nine physical therapists.

Topics ranged from basic hospital organization, budget planning, departmental organization in various sizes and types of institutions to the use of professional personnel, discussion on rehabilitation, human relations and medicolegal aspects in the practice of physical therapy. Everyone present had the opportunity of having his specific questions answered in two lively problem clinics which were held.

Social events started with a reception given by the Illinois Chapter and ended with a luncheon following which each student received a certificate denoting satisfactory completion of the course.

There is every indication in favor of making the Institute a regular feature on our calendar. In line with the policy of the American Hospital Association, it is anticipated that future sessions may be held in other areas of the country.

Recruitment Consultant Appointed

On December 1, Marjorie Hyer's duties on the national office staff were assumed by Elizabeth MacAuley. Miss Hyer resigned to accept a position with the office of Communications of the Congregational Church.

Miss MacAuley graduated from the University of Illinois with a major in English. In addition, she has taken special courses in advertising, art, writing, and public speaking. Her experience ranges from administrative assistant at the Tokyo General Hospital to advertising and promotion manager of the American Photographic Corporation. In brief, Miss MacAuley brings us excellent qualifications, talents and broad experience upon which to build a dynamic recruitment program. She became acquainted with physical therapy in Tokyo and has a real zest for her new position.

WMSC Building Tradition Around Colonel's Eagles

Eagles worn by each chief of the Women's Medical Specialist Corps are becoming a tradition with that branch of the Army Medical Service. The insignia are passed on from the outgoing to the incoming administrator.

The eagles pinned on the shoulders of Col. Harriet S. Lee, recently sworn in as Chief of the Women's Medical Specialist Corps by Maj. Gen. George E. Armstrong, The Army Surgeon General, were the identical pair affixed to the uniform of each of her two predecessors.

Col. Emma Vogel, now retired and residing in Florida, wore them as the first Chief of the WMSC in 1947. The insignia were passed on to Col. Nell Wickliffe, who retired from the Army in October 1954 and now also resides in Florida. Colonel Lee has indicated that she will present them to her successor.

Recent Changes in WMSC Procurement Officers

The Office of the Army Surgeon General has announced the current list of Women's Medical Specialist Corps officers on (procurement) duty in the six Army areas in the United States.

These officers contact professional schools and colleges, explaining the WMSC educational programs and assisting young women interested in applying for selection. They also furnish current information about active duty requirements for professionally qualified persons.

In addition to these duties they are qualified to speak on the professional opportunities and educational requirements in the fields of dietetics, physical therapy, and occupational therapy to high school students, service organizations and other interested groups. They are:

Lt. Alma Roberts, WMSC
First Army Headquarters
Medical Section
Governors Island, N. Y.

Captain June E. Handschy, WMSC
Headquarters, Third Army (AGMPPD)
Fort McPherson, Georgia

Lt. Viola M. Lentz, WMSC
Fifth Army Headquarters
Medical Section
1660 E. Hyde Park Blvd.
Chicago, Illinois

Captain Mary K. Leath, WMSC
Second Army Headquarters
Medical Section
Fort George G. Meade, Md.

Lt. Ruth H. Anderson, WMSC
Fourth Army Headquarters
Medical Section
Fort Sam Houston, Texas

Major Genevieve Beard, WMSC
Sixth Army Headquarters
Medical Section
Presidio of San Francisco, Calif.

Summary of the Minutes of the Semiannual Board of Directors Meeting

October 20-23, 1954

New York

All officers and Directors attended the meeting and spent the first day in the National Office learning about routine procedures and getting acquainted with the Staff. During the ensuing two and one-half days business was transacted as follows with Mary Nesbitt presiding:

1955 Conference Program

The plan proposed by the National Conference Program Committee to devote a major part of the program to workshops on various aspects of our professional responsibilities was enthusiastically approved.

Professional Examination Service

It was reported that the examination for *membership for foreign trained physical therapists* had been pretested in five of the approved schools in this country where it was given to 100 graduating physical therapists.

The examination for *licensing* physical therapists has been given by six states to 98 candidates.

Standing Committees

The following appointments were made:

Judicial Committee: For six years and to be chairman for two years, Clara Arrington, Washington, D.C.; for four years, Ruth Guerin, Philadelphia, Leon Stutzman, Monterey, California; for two years, Gladdes Neff, Long Beach, California, Elizabeth Wood, Chicago.

Editorial Board: Editor-in-Chief, E. Jane Carlin, Philadelphia; Associate Editor, Beatrice Whitcomb, Washington, D. C.; Assistant Editors, Helen Hislop, Minneapolis, Mary E. Kolb, Pittsburgh, Kathryn Shaffer, Madison, Wisconsin.

Nominations Committee: Carolyn Bowen, Seattle, Ruby Green Overman, Minneapolis, Florence Linduff was appointed chairman. Elected members are: Ruby Decker, Florence Linduff, Dorothy Voss.

Advisory Council: Amos Christie, M.D., Nashville; Arthur Watkins, M.D., Boston.

Prior appointments made by the Board are as follows:

Advisory Council: William Green, M.D., Boston; Charles Letourneau, M.D., Chicago; Raoul Psaki, Lt. Col., MC, San Francisco; Aura T. Severinghaus, Ph.D., New York.

Conference Program Committee: Dorothy Graves, Chairman, Los Angeles; Beatrice Schulz, St. Louis; Marcia Shaw, Detroit.

Finance Committee: R. Lewis Brown, Chairman, Pittsburgh; James Bauer, Storrs, Conn.; Dorothy Hoag, Denver.

Advisory Committee to the Department of Professional Services: Mary E. Rexroad, Chairman, Oklahoma City; Eleanor Bader, Wilmington, Del.; Louise Bailey, Chicago; Frances Ekstam, Indianapolis; Helen Vaughn, Washington, D. C.

Advisory Committee to the Department of Professional Education: Lucille Daniels, Chairman, Palo Alto; Elizabeth Addoms, New York; Helen Kaiser, Durham, N.C.; Mary E. Kolb, Pittsburgh; Margaret Kohli, Madison, Wis.; Lorraine Lake, St. Louis.

World Congress Planning Committee: Catherine Worthingham, Chairman, New York; Constance Hagen, New York; Harriet Lee, Washington, D. C.; Florence Linduff, Washington, D. C.; Hazel Stephens, Warm Springs, Ga.; Cora Alice Taylor, New York.

Second World Congress for Physical Therapy

Miss M. J. Neilson, Honorable Secretary of the

World Confederation for Physical Therapy and Miss Catherine Worthingham, Chairman of the APTA Planning Committee met with the Board to discuss responsibilities and plans which will be presented to the members as they are developed.

ADVISORY COMMITTEE ON CHAPTER ACTIVITIES

The Board created a special committee to work with the National Office in promoting chapter activities and in considering the projects of the office staff and the Advisory Committees to Professional Services and Professional Education as they relate to chapter development. The following were appointed: Barbara White, Chairman, Norwich, Conn.; Melvin Carson II, Louisville, Ky.; Elizabeth Fellows, Portland, Oregon; Dorothy Schumer, New York City; Virginia Vickers, Denver, Colo.

FINANCE

The treasurer reported that the activities of the Association are within budget.

SELF-EMPLOYED MEMBERS

In response to a resolution by the House of Delegates and a petition from a group of members who are self-employed, the Board appointed a committee of five to explore the feasibility of establishing a section to suggest rules of government and to prepare an agenda for a meeting of this group at the 1955 Annual Conference. The Committee is as follows: Edward Snapp, Chairman, Houston; Kathryn Bier, Carmel, Calif; Robert Dicus, San Fernando, Calif.; Henry Kendall, Baltimore, Md.; Emma Lentzer, Portland, Oregon.

ADVISORY COMMITTEE ON PROFESSIONAL EDUCATION

Favorable action was taken by the Board on several recommendations of this Committee including the content of a proposal for Minimum Standards for approved schools of physical therapy which will be published in the *Review* and preparation to review standards of physical therapy education in member countries of the World Confederation. In view of the fact that an Advisory Committee on chapter activities has been created the Board decided that the need for an advisory committee on recruitment has been obviated.

DOROTHY GRAVES, *Secretary*

Marriages

Louella Brown of St. Louis, Mo., now Mrs. Louella B. Cordes, St. Louis.

Patricia K. McCann of North Easton, Mass., now Mrs. Patricia M. DeCoste, Eastondale, Mass.

Norma Jean Somdahl of San Bernardino, Calif., to Robert A. Bender, Huron, So. Dakota.

Naomi Strong of Portland, Ore., now Mrs. Naomi S. Granger, Seattle, Wash.

Janet Tenney of White River Junction, Vt., now Mrs. Janet T. Dyer, White River Junction.

Audrey Ullman of Richmond, Va., to C. H. Boggs, Chicago.

Chapter News

Connecticut Chapter

The Connecticut Chapter of the American Physical Therapy Association will conduct a program on:

Neurology and Neurosurgery as Applied to Physical Therapy.

Date: Saturday, March 26, 1955

Time: 10:00 a.m. to 4:00 p.m.

Place: University of Connecticut, Storrs, Conn. Student Union

Topics: Application of electrophysiology to neurology;
Pattern Movement;
Peripheral Nerve Injury.

Registration Fee: $2.00

Students: $1.00

Pennsylvania

After thorough discussion and planning, members of the Pennsylvania (Eastern) and Western Pennsylvania Chapters met in Bedford Springs on October 30th and 31st to organize one state chapter. The Pennsylvania Physical Therapy Association, Inc. which will for the present consist of the two existing groups with a third (Central) to be formed immediately. Bylaws were adopted and officers elected as follows:

President, Mary E. Kolb, D. T. Watson School, Leetsdale; Vice-President, Virginia Whitfield, 104 Fairfax Road, Pittsburgh; Secretary, Betty Johnson, 2 E. Mercer Avenue, Havertown; Treasurer, Frank Henderson, 2460 Perkiomen Avenue, Reading.

WORLD CONFEDERATION FOR PHYSICAL THERAPY *News*

World Confederation Luncheon

During the Sixth World Congress of the International Society for the Welfare of Cripples, held in The Hague, Netherlands, September 13-17, 1954, arrangements were made to hold a World Confederation for Physical Therapy luncheon. Mrs. Rudie Agersnap of Denmark, Third Vice-President of the Confederation was the hostess. Her account of the meeting and luncheon follows:

Sixth World Congress of the International Society for the Welfare of Cripples

Theme: Changing Attitudes in a Changing World

On one of the last days of the Congress in Scheveningen in the Netherlands I decided to stop in one of the smaller towns on my way home, so that I might have a quiet day all by myself in order to sum up the many impressions which I had during my stay in Scheveningen, attending the Congress as the representative of the World Confederation for Physical Therapy.

I am not capable of giving a full report on all the different subjects dealt with at the Congress: they covered every possible side of the rehabilitation program; the treatment, training, and education not only of the patients but of the whole family and the lay people; the employment of the handicapped in sheltered workshops and in industry; the public relations and fund raising; the voluntary service and the governmental service and so on.

What I can do is to give some facts and tell something about the spirit of the Congress. About 700 people from 34 different countries participated and all kinds of professions in the rehabilitation team were represented—the medical profession, administrators from governmental and voluntary agencies, nurses, physiotherapists, occupational therapists, social workers, bandagists, governmental observers, and representatives from all international organizations.

The World Confederation for Physical Therapy arranged with the help of Mr. Donald Wilson, the Secretary General of the International Society for the Welfare of Cripples, a luncheon for the participating physiotherapists. Forty-two persons from ten different countries were present at the luncheon and we had the pleasure and honor of having with us Mrs. J. M. Ravesloot, the wife of the president of the Congress, Mrs. Donald Wilson, and Mr. Norman Acton, the Assistant Secretary General., We would have liked to have had Mr. Ravesloot and Mr. Wilson with us, but Her Royal Majesty Queen Juliana, who honored the Congress with her presence on Wednesday, received the officers and council members of the Society at the same time that our luncheon took place. We had made a table plan in order to have the physiotherapists from the same country separated, thus giving them a chance to meet colleagues from other countries. The "Fact-Sheet" sent to us by Miss Elson for distribution was used as a place card. The table was beautifully decorated with flowers, a gift from Miss Elson, who had also sent a written message with the following content:

Dear Colleagues:

> Just a year ago the wonderful First Congress of the World Confederation for Physical Therapy came to a close. As we left London we carried with us many memories; happy ones of social events, friendships made and renewed; challenging ones from the scientific program, trade exhibit and study visits; sobering ones from the work yet to be done in our own countries and in the many areas of the world where rehabilitation is but a dream.
>
> Today you are privileged to be attending the Sixth World Congress of the International

Society for the Welfare of Cripples and you too will become aware of work yet to be done, but at the same time be gratified with the progress made through the cooperative efforts of many, many people. To each of us what we do is very important, but equally important is the recognition of how much more effective our work becomes when we work cooperatively side by side with other professional colleagues, all with the same objective—rehabilitation of the patient.

Here at this Congress you have a great opportunity of gaining an understanding of the other fellow's job and how you can work with him better. From it I am sure you will go home renewed, stimulated, and challenged to even greater efforts. I am very proud of physical therapists for their willingness to learn, to share, and to cooperate with their fellow citizens and other workers in providing greater service to the handicapped. We are too few but there will be more, there *must* be more to do the job.

The World Confederation is deeply grateful to the International Society for arranging this luncheon. We particularly wish to thank Dr. C. P. H. Teenstra, Chairman of the Organization Committee, and Mr. Donald Wilson, Secretary General, who suggested and made arrangements for the luncheon. I know that all of you present join with me in assuring Mr. Wilson and the International Society of the cooperation of the World Confederation and physical therapists everywhere in carrying out its program. My only regret is that I am not with you but the World Confederation is fortunate in having its able Third Vice-President, Mrs. Agersnap of Denmark as its representative. My warmest regards to all of you—I am certainly with you in spirit. It is my hope that I will see all of you in New York at the Second Congress of the World Confederation for Physical Therapy in June, 1956.

MILDRED ELSON

Attending from the American Physical Therapy Association were Lucy Blair, Miriam Jacobs, Margaret Camp, Lucille Cochran, and our friends Dr. Jessie Wright and Mr. Eugene Taylor.

"Changing Attitudes in a Changing World" was the theme of the Congress, a theme placing on every delegate a responsibility to do his utmost in carrying out his part of the rehabilitation program wherever he is working and whatever is his job. It is a theme to remind everyone of the fact that programs, methods, and ideas must be renewed and brought up to date as the demands and claims are changing. As a physiotherapist one felt the great and inspiring responsibility placed upon one, a responsibility to do our utmost in the working team of which we are an integral part.

In all papers and discussions on rehabilitation it was stressed that rehabilitation could not be possible without an effective cooperation of a qualified and well trained staff of the whole medical and social team. Physiotherapists are playing an important and highly esteemed part in that team, a fact which is well known to all of us and now seems to be well known to others too. But are we doing our utmost in participating in that scheme? And are we doing our utmost for our profession and for the cooperation with allied professions? I shall not answer these questions, but I hope that every one of the member organizations of the World Confederation for Physical Therapy will give this their consideration. There will be a growing demand for physiotherapists in the future and it is up to us to do whatever possible to make the value and recognition of our work as highly esteemed as possible for the benefit of our patients and thereby for the benefit of the individual and the profession.

RUDY AGERSNAP
Third Vice-President, World Confederation for Physical Therapy

The Proceedings of the Congress are available through: Central Council for the Care of Cripples, 34 Eccleston Square, London S.W. 1, England; and International Society for the Welfare of Cripples, 127 East 52nd Street, New York 22, New York.

Price: Cloth-bound edition $3.50 Paper edition $3.00
10 per cent discount for orders of ten or more copies.

Second Congress of The World Confederation for Physical Therapy

The Congress Planning Committee consisting of Catherine Worthingham, Chairman, Harriet Lee, Florence Linduff, Hazel Stephens, Constance Hagen, and Mildred Elson met in New York, October 16 and 17, 1954. Miss M. J. Neilson, Honorable Secretary of the World Confederation and Secretary of the Chartered Society of Physiotherapy of Great Britain met with the Committee.

Miss Neilson presented to the American Physical Therapy Association a bound volume of the Organization of the First International Congress sponsored by the Chartered Society. This gives in detail and according to a time schedule all work down to the last detail for the First Con-

gress and will be of immeasurable assistance to the Association in its plans. The Committee and the National Office are most appreciative of this fine resource volume. In addition Miss Neilson gave us many sidelights and advice based on her experiences.

Details of the planning for the program and social events will appear in the *Review*. The program will be developed around the theme of the physical therapist's contribution to the health of the world. Speakers will be drawn from all the member organizations as well as international and nationally recognized authorities. Films from this country and abroad will be shown. Our good neighbor and friend the Canadian Physiotherapy Association will sponsor one social event. The exhibits will be under the direction of Gordon Marshall who is the Association's Advertising and Exhibits Manager.

Work has already started on an eighteen-month schedule is in effect. Watch the *Review* for details.

Fact Sheet

World Confederation for Physical Therapy

History

1948—London—Initial planning
1951—Inaugural meeting—Copenhagen
1953—First World Congress—London

Member Organizations

Australia	—The Federal Council of the Australian Physiotherapy Association
Canada	—Canadian Physiotherapy Association
Denmark	—Danske Fysioterapeuter
Finland	—Suomen Laakintavoimistelijain Yhdistys
France	—Comite National des Masseurs-Kinesitheraputes Francais
Great Britain	—Chartered Society of Physiotherapy
*Holland	—Nederlands Genootschap voor Heilgymnastiek, Massage en Physiotechniek
New Zealand	—New Zealand Society of Physiotherapists, Inc.
Norway	—Norske Sykegymnasters Landsforbund
South Africa	—South African Society of Physiotherapists
Sweden	—Kvinnliga Legitimerade Sjukgymnasters Riksforbund
United States	—American Physical Therapy Association
West Germany	—Zentralverband der Krankengymnastischen Landesverbande in westerdeutschen Bundesgebiet

* (to be confirmed at the 1956 Congress)

Executive Committee

Mildred Elson, President ..... United States
Miss G. V. M. Griffin, 1st Vice-President ..... England
Mrs. Sigrid Coleridge, 2nd Vice-President ..... Sweden
Mrs. Rudie Agersnap, 3rd Vice-President ..... Denmark
Miss M. Brown ..... New Zealand
Mr. J. Dupuis Deltor ..... France
Miss Marjorie Spence ..... Canada
Miss M. D. Verco ..... Australia

Purpose

To encourage improved standards of physical therapy training and practice in order to provide the highest quality of service to the patient.

To provide information, counsel, and assistance in the field of physical therapy.

To cooperate with appropriate agencies of the United Nations and other international agencies.

Who May Join

One national association from each country composed of physical therapists or one national federation or national committee of physical therapists, provided that its constitution and/or Bylaws or Articles of Association are in harmony with those of the World Confederation for Physical Therapy.

Publications

Quarterly Bulletin to Member Organizations
Proceedings of the First World Congress—$2.50

Collaboration

Associate member of World Organizations Interested in the Handicapped

Some of the thirty-eight physical therapists from eight countries in attendance at the Third International Poliomyelitis Congress held in Rome, Italy, September 6-10, 1954.

Next World Congress

June, 1956—New York City, U.S.A.

What is Physical Therapy

Physical Therapy—also called Physiotherapy, Kinesitherapie, is an integral part of a medical care program for patients who, because of disease or injury, are or may become disabled. It includes the application of heat, cold, light, water, electricity (except roentgen rays), massage, exercise, upon prescription of the physician. It is therefore essential in the process of rehabilitation to assist the person with a handicap to realize his potentialities and goals; physically, mentally, and economically.

The physical therapist is prepared to give all forms of exercise to enable the patient to achieve his maximum self-sufficiency. This includes detailed muscle reeducation, general strengthening, postural coordination, ante- and postnatal, underwater, and all forms of resistive exercise using appropriate apparatus; training of the amputee in the use of his prosthesis; crutch walking; training in the use of assistive devices.

The basic knowledge the physical therapist is required to have in anatomy, kinesiology, physiology and physics, in addition to his technical skills, enables her or him to select and administer those exercises which will attain the object of treatment as stated by the physician in his prescription.

The physical therapist recognizes the importance of and contributes to the coordinated efforts of all co-workers in the rehabilitation of the patient.

Enquiries

To: Miss M. J. Neilson, *Hon. Secretary*
Tavistock House South
Tavistock Square
London W. C. 1, England

First Vice President, World Confederation for Physical Therapy

Miss G. V. M. Griffin of the Chartered Society of Physiotherapy, Great Britain, has been appointed First Vice President of the World Confederation for Physical Therapy to fill the unexpired term of Miss W. McAllister who died April 14, 1954.

Miss Griffin is a member of the Council of the Chartered Society of Physiotherapy and Chairman of the General Purpose and Establishment Committee. Miss Griffin will be remembered by those who attended the 26th Annual Conference held in Boston as she was there as the official delegate of the Chartered Society.

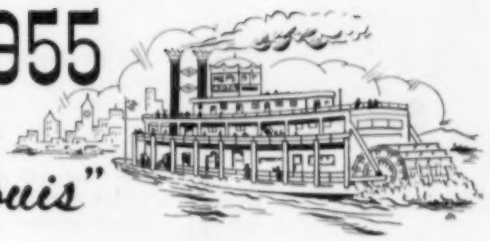
Correction

In the December *Review* the biography of one of our book reviewers was not accurate. It should have appeared as follows: Signe Brunnstrom, Consultant in Amputee Rehabilitation, N.Y.U.-Bellevue Institute of Physical Medicine and Rehabilitation, New York City. She is also affiliated with the Burke Foundation in White Plains.

CONFERENCE 1955

JUNE 19th to 25th

"Meet me in St. Louis"



Meet Me in St. Louis

Laying aside all hooey,
When you trek into St. Louis,
Feel certain that you're well-come
With or without your Louie!
There'll be steamboats at the levee,
But DC-6's overhead;
Times change and we with 'em,
But not in ways to dread,
'Cuz "the child of the river
And the parent of the West"
Is eager to have you as a guest.

Now, spurning further doggerel, the members of the Eastern Missouri Chapter of the American Physical Therapy Association cordially welcome you and the annual Conference to St. Louis in '55.

Founded by Frenchmen, named for a French king, and the seat of government for the Upper Louisiana territory during French and Spanish rule, St. Louis is today the city surrounded by the United States! You'll have no problem reaching it from wherever you hang your hat—by air, rail, river, or highway.

When you cross the welcome mat at Hotel Jefferson on June 19, you will find that serious-time and play-time have been carefully balanced. There will be time enough and fun enough, you can be sure! A night at the world famous Municipal Opera or a moonlight cruise aboard a luxury paddle-wheel are only samples of the pleasures that are waiting for you in St. Louis. Come in June to learn why, ever since 1904, people have smilingly said—"Meet me in St. Louis."

("For more about '55, turn to 44.")

Statue of Saint Louis, erected on the crest of Art Hill in Forest Park. This is Louis IX, King of France, a crusading king, who was the patron Saint of Louis XV of France, after whom St. Louis was named.

S*peedy*
T*ransportation*
L*ands*
O*ur*
U*niverse*
I*n*
S*t. Louis*

It's so easy to reach St. Louis! Look at the map, and then plan to go — somehow, anyhow, next June! Situated in the center of the country, we see that something on wheels or wings, is headed that way — ready to take us to our Conference. A second glance at the road maps will convince our busy, yet pleasure-minded members that those who live within easy driving distance will be coming from all points of the compass. When you meet together to share experiences, you will be in the comfortable rooms of the Jefferson Hotel, which is in the center of downtown attractions in St. Louis. Watch for further information covering sights to see and many beauties to enjoy during your leisure time. But the boat we will board is our own to steer! The Show is on, and *we* are the players! This is *your* Conference in a very special way; and there is no doubt that "the Show must go on." A number of topics for our Workshop Conference have been suggested, and we hope members will continue to express their thoughts in this direction. Let us set the stage for a stimulating exchange of ideas — a series of discussions of many phases of physical therapy — and an opportunity to evaluate our performance as key players on our own "Show Boat"!

Medical Director of Physical Therapy Course at Northwestern

On May 1, 1954 Dr. Ben L. Boynton was appointed Medical Director of the Course in Physical Therapy. Dr. Boynton joined the faculty of Northwestern University Medical School in September 1953 as Professor and Chairman of the Department of Physical Medicine. He is Medical Director of the Rehabilitation Institute of Chicago, and Consultant in Physical Medicine at the new VA Research Hospital in Chicago.

An alumnus of Northwestern University Medical School and a student of physical medicine under Dr. John S. Coulter, Dr. Boynton did graduate work at Mayo Clinic and the University of Wisconsin. He served as Lieutenant Colonel in the Army of the United States, was Chief of Physical Medicine and Rehabilitation for the Veterans Administration in Houston, Texas, and held the chair of Professor of Physical Medicine and Rehabilitation at Baylor University Medical College. He is a diplomate of the American Board of Physical Medicine and Rehabilitation. He brings to the Course in Physical Therapy a background of teaching and clinical experience, particularly in the field of rehabilitation, which will strengthen and broaden the professional curriculum.

Dr. Emil D. W. Hauser, who held the post of Medical Director from 1950 to 1954, is a graduate of Minnesota Medical School and received his M.S. in orthopedic surgery there in 1927. He has been associated with Northwestern University since 1930, when he was made assistant in orthopedics and appointed to the attending staff at Passavant Hospital. As assistant Professor of Bone and Joint Surgery, he first became affiliated with the Course in Physical Therapy in 1939, and has continued since that time as instructor in orthopedics, Medical Director, and acting Chairman of the Department of Physical Medicine and Rehabilitation.

Dr. Hauser's contributions to Northwestern University and to the profession in physical therapy have been manifold. Through his interest, knowledge, understanding, and support as teacher, administrator, and advisor, he has been and will continue to be a source of inspiration to all who are associated with physical therapy at Northwestern.

New Technical Director at Hermann School of Physical Therapy

Mrs. Elizabeth Barkley, Technical Director of the Hermann School of Physical Therapy, Houston, Texas, offered her resignation, effective September 24, 1954. She has been appointed Associate Technical Director and will assist in the teaching program.

Mrs. Cecelia Lee replaces her as Technical Director and assumed her duties October 1, 1954.

Student Section

A New Cause

Do you remember how eagerly you looked forward to starting your major in Physical Therapy? And do you also remember how you were a little staggered by the number of courses you were to take, and the amount of studying it involved? Of course you do, and so do we. We realize how important it is to do the best work of which we are capable, for this is our chosen field.

We would like to champion something we feel is extremely important and plainly essential to physical therapy students: the need for fun and recreation, particularly as a group. It seems that the big question is how and when.

Social activities here at Columbia are most likely just as much of a problem as they are at any P.T. school where the schedule is heavy, and many of the students live a good distance from school. With the busy program and homework to be done, the tendency is to disperse after school hours, thereby making social activities virtually impossible.

Within our own (senior) class, we have been quite successful in arranging supper parties and picnics, because we are a small group. However, trying to arrange a social get-together of some sort for the whole P.T. school has been a problem, and while it is expected that some people will be unable to be present, it does seem that some should be able to attend. The one successful event planned and presented by the whole physical therapy school was a square dance last March, and this was such a resounding success that it showed very plainly what can be done.

We do not feel that we can suggest ways and means of having successful class or group activities, since we are trying to cope with the same problems that arise in other P.T. schools. We are simply trying to point out the need for fun and recreation, for several reasons.

First, all students need a "break" once in a while, in order to return to their work alert and interested. After all, "variety is the spice of life."

Second, it's fun to get to know each other, and this cannot be accomplished just by going to school together. Under the atmosphere of a social gathering, people display talents and personalities you never dreamed existed.

Third, the class becomes more strongly united, and the members are able to accomplish better things through the spirit of unity.

Last, a good P.T. is a well-balanced combination of knowledge, experience, and an understanding of *all* people.

So let's not forget that while our courses and studying are of the utmost importance in order to be proficient in our chosen field, so are recreation and relaxation, for after all, "all work and no play make Sam and Susie very dull people."

MARGE GREENFIELD AND DUNCAN KENNEDY
Columbia University

News from New York University

The physical therapy students of New York University have started their 1954 specialization program with a step in the forward direction, for they are now associated with two new facilities.

First, they attend classes at the new Medical Science building, at 31st Street and East River Drive, which opened just this summer for classes. Second, they attend classes at St. Vincent's Hospital, where they are instructed by Dr. Sverdlik, head of the Rehabilitation Department at St. Vincent's, and Miss Mary Eleanor Brown, who instructs in massage theory and practice.

The students are permitted to attend neurological and rehabilitation conferences which prove to be of great value because the students can see the patients as well as hear about them. The students also can observe operations over color television sets, and this is a wonderful experience. Having classes at St. Vincent's has meant advancement in the specialization program, for here the students see cases that are typical of the ones treated in a general hospital.

This September, there was a registration of 75 freshman students in the physical therapy curriculum. This large number of students will eventually lead to a better basis for the organization of the four-year curriculum.

The Physical Therapy Club of NYU is quite new, since it was organized only a term ago. Members of the club are from all four classes of the physical therapy curriculum. One of the main objectives of the club is to acquaint stu-

dents with physical therapy, and to try to interest other students in making physical therapy their career. The club also is making plans for parties, dances, and benefits to be held in the near future.

DIANE ZIRK
New York University

School News

Dorothea Cepik of the *Cleveland Clinic* reports that students spent four months in clinic, and graduated on October 8, 1954. By this time, they're hard-working grads—Good Luck!

From the *University of Buffalo*, we hear that students enjoyed a wonderful picnic this past summer at the home of one of the faculty members. Seems like a long time ago, but it's nice to have warm memories during the cold winter.

A letter from Arlene Faigenbaum of the *Albany Hospital*—"In years past, the physical therapy program of the Albany Hospital has consisted of students from Russell Sage College, and certificate students from the surrounding area. As of this year, the Russell Sage students have added something more, for our class is complemented by the Junior year physical therapy majors at Russell Sage who join us for a day and a half each week. On these days, the Juniors take the courses that the Seniors and certificate students have, physiology and massage.

"It is believed that having the Juniors will achieve a dual purpose:

1. It will acquaint the Juniors with hospital life, so they can be sure they are in the right field.
2. It will lighten the number of courses now being taken in the Senior year.

"This is also the first year that a physical therapy class has been organized and has elected officers. The slate of officers is: President, Secretary-Treasurer, Sergeant-at-arms, Publicity Chairman, Supply Chairman, and Junior Representative."

New Student Members

Cleveland Clinic

Marian Chase	Joyce Eaton
Joseph A. Fedele	David Hoopes
Audrey Kellermeyer	Alice L. Israel
Gaspare Labella	Helen McGarvey
Patricia Rogers	Jo Ellen Secoy
Pauline Stoner	Marjorie Stricker
Ann Voth	Patricia Walther

Richard Warth

D. T. Watson School

Phyllis L. Bond	Philip A. Canton
Nancy R. Copp	Lucila Diaz-Lopez
Mary G. Florian	John L. L. Grayson
Charles W. Hayhurst	Maria W. Janssen
Joann Kaufman	Leonard E. Levy
William J. Lurty	Lenita Massey
Dorothy E. McDonald	Eleanor G. Osborne
Grace A. Schmitt	Robert Steinmetz
Eugene L. Strosser	Teresa A. Urrutia

Edwin Wietnik

Columbia University

Barbara Cooper	Joan Heiniger
Alma D. Johnson	Betty Sue Lockman
Marianne T. McPhillips	Jerome Menchel
George Miller	Camilla Rambusch
Jane Ruslander	John M. Simon
Neil Spielholz	Karen Stotz

Janet Sullivan

New York University

Howard A. Appleby	Tali Alborz
Calvin Banks	Maurice Burnley
Shirley Cutler	Nicholas Lorusso
Joseph Malloy	William W. Perry
James H. Ramsey	Jack Robbins
Arthur Sandler	Seymour M. Schlosseman
Laurie Eustace Selman	Louis Tinghino
Nancy Van Wie	Edna Wolf

Diane Zirk

Puerto Rico

Haydee Acevedo	Laguer Auero
Evelyn Carrasquillo	Eloy Gutierrez
Trinidad Llanos	Ana O'ferral
Radames Oliver	Rosa Polanco
Miriam Rojas	Hector W. S. Velez

U. S. Army

Marilyn Brannon	Olga Burns
Ann M. Funsoni	Patricia E. Golden
Wilma Hall	Elizabeth Hamilton
Nancy Hansen	Kathryn Hornbacher
Ethel Kelly	Estill V. Latimer
Patricia Latta	Eileen O'Neill
Martha J. Osborn	Connie Schweitzer
Ellen M. Taberg	Beatrice E. Thompson
Dorothy Vollmer	Patricia Whitmore

University of California

Louise Aaron	Kashiwa Aizawa
Geraldine Brancato	Leland H. Bresee
Carole Carlin	Pedro Castillo
Nancy Cutter	Edna Darrow
Mary Lou Early	Lewis M. Edwards
Yoshie Enkoji	Glea Gunderson
Ann Halsey	Margaret Mary Hess
John M. Lollar	Gerda Kalisch
Ramona K. Kline	Marlene Mlaker
Akiko Oyamada	Patricia Anne Putnam
Phyllis Rubin	Shirley Starr

Phyllis Vincent

University of Colorado

Joan Altherr
Mary A. Calvert
Eileen S. Ostenaa
Mary Corinne Spath
Dorothy Tappan
Curtis Bashor
Elaine Gobble
Margot Porter
Virginia V. Sutton
Claire Wuerl

University of Iowa

Nadine Andrews
Carolyn N. Burnett
Jean F. Cressy
George Hamilton
Minerva J. Kunze
Patricia McGowan
Grace G. Blackmore
Ernestine Collins
Patricia A. Grube
Charles G. King
Thomas Loome
Larry Pugh
Diane Skinner

University of Minnesota

Joyce Panayotoff

Washington University

Mary S. Bowser
Jean Glover
Barbara Hultquist
Doris Ann W. Brydon
Joan S. Eime
Helen A. Van Woert

Address at Graduation Ceremony for Physical Therapists

Dr. I. L. Baldwin, Vice President of Academic Affairs in an address to physical therapy graduates of the University of Wisconsin, said:

"It is the custom for a speaker on occasions such as this to offer a challenge to the graduates. But for you, that seems unnecessary. Challenges for physical therapists come thick and fast, and your biggest job is to be able to recognize and meet as many of them as you can.

"In terms of human happiness there is no way of assessing the value of the careers you are now about to begin. I think, however, that in terms of personal satisfaction, there are few professions that equal those which deal with the relief of the ills and injuries to which mankind is heir. In a world such as ours, you will have challenges enough in your time, and mankind will be universally grateful for the work you will do.

"There is one danger for you in the ever-increasing challenges of your profession—a danger that you may become so absorbed in day-to-day problems that you can give scant attention to the basic, long-range challenges of your field. What you are going to be doing will be hard work. You have just had four years of hard work, so such tasks will not surprise you. But what I want to say is this: don't drown in the daily clinical routine.

"You are pioneers in a new field of medicine; it behooves a pioneer to be alert to what the scouts of research are saying about the land that lies ahead. Education does not end with the granting of a degree, and individuals in your field should be most acutely aware of that fact. By now you know how this can best be done. There are the medical and the scientific journals, the meetings, the clinics, and the postgraduate courses.

"In many important respects, the developments in your field are directly dependent upon the advances in the laboratories devoted to basic research. New methods of diagnosis, new therapeutic methods will appear—probably at an accelerating rate—throughout your careers. It is one of your challenges to keep up with these advances. For those of you to whom research has a great appeal, the opportunity lies open in graduate study in physiology, anatomy, and other related sciences. Research has been called the endless frontier, and in a field as new as physical therapy, the need for dedicated research workers will be an acute one for years to come.

"Your education has actually been two-fold: you have a solid professional education as part of a general, liberal education, obtained at what we believe to be one of the nation's leading institutions of higher learning. We have tried to give you the knowledge and the skills which will be required for your work with individuals in the community; we have tried to give you the intellectual tools which will make you an intelligent citizen of your country. All of us have two kinds of problems—those which concern us as specialists, and those which concern us as members of the group. Do not become so deeply involved in either that you neglect the other.

"You have been given the fundamentals for creative acivity in both of these broad regions of human endeavor. Use your critical and creative faculties to build a better world around you. One of the greatest wastes of natural wealth is unused intelligence and training. The responsibilities of an education are equally as great as the benefits. Each of you is now endowed with the knowledge and the opportunity to be of tremendous service to mankind. You have the traditions of centuries of medical workers to inspire you. You have a great heritage of freedom and democracy to perpetuate.

"And now you stand on the threshold of your career. The instruments and the knowledge provided by many lifetimes of research and work are at your disposal. You have a long career of useful services ahead of you—the prevention of suffering, the recreation of harmony in disrupted lives, the bringing of happiness to others. You will have the privilege, as a daily routine task, to lengthen the lives of your fellow human beings. There is no greater satisfaction than you will find in serving your fellow men. . . ."

Physical Therapy Programs—1955

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

DEGREE and CERTIFICATE PROGRAMS—Information on specific entrance requirements should be obtained from the schools listed below. Schools offering a degree will accept high school graduates for the four year program leading to a baccalaureate degree, *as well as transfer students.* A certificate program is a concentrated course of study offered to those who have completed all or most of their undergraduate work before declaring a major in physical therapy. Graduates of either the degree or certificate programs are equally qualified.

	Degree Program	*Certificate Program*
California		
School of Physical Therapy Childrens Hospital Society (Univ. of California at Los Angeles) 4614 Sunset Boulevard Los Angeles 27	†	†
School of Physical Therapy College of Medical Evangelists White Memorial Hospital Boyle and Michigan Avenues Los Angeles 33	†	*
Department of Physical Therapy University of Southern California University Park Los Angeles 7	†	†
Curriculum in Physical Therapy School of Medicine University of California 3rd and Parnassus San Francisco 22	†	†
Division of Physical Therapy Stanford University Stanford	†	†
Colorado		
School of Physical Therapy School of Medicine University of Colorado 4200 East 9th Avenue Denver 7	†	†
Connecticut		
School of Physical Therapy University of Connecticut Box U 101 Storrs	†	
Illinois		
Course in Physical Therapy Northwestern University Medical School 303 East Chicago Avenue Chicago 11	†	†
Iowa		
Department of Physical Therapy State University of Iowa University Hospitals Iowa City		†
Kansas		
Section of Physical Therapy University of Kansas Medical Center 39th and Rainbow Boulevard Kansas City 3	†	†
Louisiana		
School of Physical Therapy Charity Hospital of Louisiana 1532 Tulane Avenue New Orleans 12		†
Massachusetts		
Department of Physical Therapy Boston University Sargent College of Physical Education 6 Everett Street Cambridge 38	†	†
*Course in Physical Therapy Bouve-Boston School Tufts College Medford 55	†	
*Program in Physical Therapy Simmons College The Fenway Boston	†	†
Michigan		
Curriculum in Physical Therapy University of Michigan 1313 East Ann Street Ann Arbor	†	†

*Accepts women students only.

	Degree Program	Certificate Program
Minnesota		
School of Physical Therapy Mayo Clinic 102-110 Second Avenue, S.W. Rochester		†
Course in Physical Therapy 860 Mayo Memorial University of Minnesota Minneapolis 14	†	
Missouri		
Division of Health and Hospital Services St. Louis University 1325 South Grand Boulevard St. Louis 4	†	
Department of Physical Therapy School of Medicine Washington University 660 South Kingshighway St. Louis 10	†	
New York		
*School of Physical Therapy Albany Hospital (Russell Sage College) New Scotland Avenue Albany 8	†	*
Courses for Physical Therapists Columbia University College of Physicians and Surgeons 630 West 168th Street New York 32	†	†
Physical Therapy Division School of Education, New York University Washington Square East New York 3	†	†
Program in Physical Therapy University of Buffalo 2183 Main Street Buffalo 14	†	†
North Carolina		
Physical Therapy Course School of Medicine Duke University Durham		†
Ohio		
Course in Physical Therapy Frank E. Bunts Ed. Inst. Cleveland Clinic Hospital 2020 East 93rd Street Cleveland 6		†
Pennsylvania		
Division of Physical Therapy School of Auxiliary Medical Services University of Pennsylvania 1818 Lombard Street Philadelphia 46	†	†
Division of Physical Therapy The D. T. Watson School of Physiatrics (In affiliation with the University of Pittsburgh) Sunny Hill Leetsdale	†	†
Puerto Rico		
School of Physical and Occupational Therapy Commonwealth of Puerto Rico State Insurance Fund San Juan, P.R.		†
Texas		
Grady Vaughn School of Physical Therapy Baylor University University Hospital Dallas	†	†
Hermann School of Physical Therapy Hermann Hospital 1203 Ross Sterling Avenue Houston 5		†
Division of Physical Therapy University of Texas School of Medicine Galveston	†	†
Virginia		
School of Physical Therapy Baruch Center of Physical Medicine and Rehabilitation Medical College of Virginia 1203 East Broad Street Richmond 19	†	†
Wisconsin		
Course in Physical Therapy Medical School, University of Wisconsin Madison 6	†	†
U. S. Army Medical Service		
*Physical Therapy Course Medical Field Service School Brooke Army Medical Center, Fort Sam Houston, Texas and Brooke, Letterman and Walter Reed Army Hospitals Write to: The Surgeon General Department of the Army Washington 25, D. C. Att: Personnel Division		†

*Accepts women students only.

Please direct all inquiries regarding tuition, entrance requirements and other specific information to the school and *not* to the American Physical Therapy Association.

Abstracts

Practical and Theoretical Considerations with Regard to Vaccination in Poliomyelitis

J. R. Paul, J.A.M.A. 156:18-20, September 4, 1954.

Today the goal of immunization against poliomyelitis is to produce artificially what nature does for about 99 per cent of the population and to do it without incurring the 1 to 100 risk of paralysis that is the price paid by naturally acquiring immunity.

The use of gamma globulin in past recent epidemics has produced no definite immunity and can be claimed to have only limited usefulness as a prophylactic agent for the paralytic form of polio. Whereas with this type of passive immunization a person could expect only temporary protection, active immunization, when achieved, may be expected to be effective for much longer periods.

A great deal of preliminary work has been done prior to making a human vaccine trial with an active agent possible. First among these was the separating of the polio viruses into three serotypes, then the development of knowledge of antibody patterns in various populations. The most important development, however, was the knowledge that polio viruses not only multiply in non-nervous tissues but also produce certain cytopathogenic changes by which they can be recognized. This made the time and expense involved in the exclusive use of monkeys for experimentation unnecessary. On this basis Salk produced and reported results of the first tests with "killed" tissues culture viruses in human beings. While antibodies to all three immunologic types are used in this vaccine the results are still speculative.

Another possible approach to the problem lies in the use of a live but a virulent virus, following the lead of Jenner in the prevention of small pox. The situation is triply complicated in polio because strains of all three types of virus would have to be discovered or produced. Each of which would have lost its power to paralyze but retained its power to immunize. Work is being carried on at present which indicates that this method shows promise for human vaccination. Despite the quantities of lay publicity, however, there is no real or official vaccine for poliomyelitis to date.

Recent Advances in Clinical Aspects of Poliomyelitis

R. S. Blattner, J.A.M.A. 156:9-12, September 4, 1954.

Pressure on the physician from a panicky public makes the difficulty of a correct differential diagnosis for suspected poliomyelitis much greater. Asymptomatic infections present no problem but the abortive cases should be recognized, since the clinical impression is that bed rest during the febrile course of the disease may avoid progression of the viral infection.

The diagnosis of the nonparalytic form of the disease is often complicated by the fact that many clinical conditions may be confused with the nonparalytic or preparalytic poliomyelitis. At one polio treatment center over a period of four years 15 per cent of all cases admitted were found to be suffering from conditions other than polio, 26 per cent were classified as nonparalytic and the remaining 59 per cent had the paralytic form of the disease. Progression of the disease process is of paramount importance at any stage of the clinical syndrome and attending staff should be constantly on the alert for early signs of more serious complications.

Brief outlines of suggestive and confirmatory symptoms of poliomyelitis are presented as well as criteria for clinical determination of breathing difficulty.

Factors in the Causation of Recognizable Poliomyelitis

F. H. Top, J. IOWA STATE MED. SOC., 379-383, August 1954.

Knowing that poliomyelitis is a universal infection, the question is raised as to why there are so few instances of disease, paralysis, and death from so many known infections. The infection and disease result from the interaction of a host and a parasite operating within an environment common to both, but not necessarily affecting both equally. Recent studies about such factors as stress, tonsillectomy and inoculation seem to indicate that the determining factors which influence the occurrence of the recognizable form of the disease may not lie in the parasitic variations but rather in non-immune factors affecting the host and perhaps in environmental changes. This does not mean that the virus plays a minor role, and the possibilities of a change in virulence of the organism or of areawide infection by a strain more pathogenic for man than most others should certainly be considered. At the present there have been an insufficient number of virus identification studies linked with clinical severity of cases to determine whether parasitic factors are operative.

The relation between age at which the infection first occurs and environmental factors does not adequately explain the occurrence of recognizable cases. Also an insufficient number of observations have been made over too short a period of time to determine the influence of temperature and humidity on the occurrence of recognizable poliomyelitis.

There is then, a body of information available concerning polio in extent to that known for other diseases. But the validity of this knowledge causes special concern, making the necessity for further investigation obvious.

Recent Advances in the Treatment of Poliomyelitis

J. E. Affeldt, J. A. M. A. 156:12-15, September 4, 1954.

Recent advances in treatment of poliomyelitis have been in two directions: those that reduce the mortality rate and those that attempt to restore function as completely as possible. Increased understanding of the value of early tracheotomy and the physics and physiology involved in the use of mechanical respiratory aids have significantly reduced the morbidity. Medically, the wider use of definitive antibiotics, trypsin, nebulization, and detergents have proved successful in combating the major complications such as pneumonitis and atelectasis. The development of mechanical coughing devices promises great help both therapeutically and prophylactically. In small communities the organization of professional teams has done much to solve acute problems and achieve greatly reduced mortality rates.

After the patient has become medically stabilized, a shift in the philosophy of treatment occurs to focus attention on the motivation of the patient and the will to work toward recovery. Improvement in technics and devices for functional restoration have included glossopharyngeal breathing, muscle transplants, functional bracing, and prostheses.

The National Foundation for Infantile Paralysis has set up nine regional respiratory centers throughout the United States devoted to the evaluation, care and rehabilitation of patients and providing related education and research. Advantages of these centers have been proven in the areas of development of trained medical teams, reduced cost of care, and increased motivation of patients. The developments being made at these centers will carry over into other areas of medicine.

Leadership: Shall It Reside in the Leader or in the Group?

T. Gordon, AM. J. NURSING, 54: 1087-1088, September 1954.

Society today tends to place a criterion of effectiveness on groups that involves only how well they solve immediate problems or how much they produce in a short time. The fact that groups contain future leaders and that they train these persons on a long-range basis has been overlooked. A new concept of the group is presented here in which each member of the group is a potential leader and this leadership potential increases constantly. Thus the center of focus shifts from a single group leader to any group member who behaves in a way that influences the group either intentially or unintentionally.

In groups where a formal leader has power and authority over the members there are many barriers to the members taking part creatively. These include fear of evaluation or rebuke, economic insecurity, past experience which has taught a passive submission to persons of authority, and for some an instinctive desire to spend their time and energy fighting the leader. In the extreme, such groups are "leader-centered" and the leader exerts a disproportionate influence in solving the group's problems while the members either fight or submit.

To make the group more effective, a leader must become "group centered." He must believe that group members do have something to contribute, that the group exists to achieve the goals of its members, and he must delegate as much of his authority to the total group as he can. By this removal of the threat of a leader's power and authority there can be created in the group a psychological atmosphere that is conducive to active and creative participation of the members.

Osteoporosis

A. M. Rechtman and M. W. Yaffow, AM. PRACT. AND DIG. OF TREATMENT, 5:691-695, September 1954.

Osteoporosis, an important metabolic disease with orthopedic manifestations, occurs in both sexes at all ages and is related to various etiologic factors. It is primarily associated with a disruption of protein metabolism and secondarily of calcium, phosphorus and alkaline phosphatase metabolism. Normal osteoblastic activity may be influenced by steroids, mechanical strains and stresses and nitrogen building blocks, as well as other perhaps as yet unknown factors. Many types of osteoporosis have been described, but among them the postmenopausal is the most common of the systemic osteopathies. At this age there is a decline of estrogen which may produce decrease in protein anabolism and result in decreased osteoblastic activity with inadequate bone formation. Other types include the senile, malnutritive, disuse and idiopathic forms of the disease.

The diagnosis of osteoporosis is often gathered from clinical impressions and the process is one of deossification or bone loss in contradistinction to decalcification or demineralization. Etiology is important in the differential diagnosis and it should not be confused with such conditions as hyperparathyroidism, generalized Paget's disease, osteomalacia or multiple myeloma.

Treatment is relatively satisfactory in relieving the subjective complaints even though x-ray changes may not be evident for some years. Prevention is of primary importance. Particularly with older persons an adequate high protein diet should be urged. Hormone therapy may be a useful adjunct. The attending physician should be alert for changes in the spine, pelvis and femur, the most frequently observed sites of osteoporosis. Orthopedic management includes use of the bed board, firm mattress, and mechanical supports if indicated.

Analysis of the Electrocardiograms Obtained from 1000 Young Healthy Aviators

Ten Year Follow-up

Lt. John M. Packard, John S. Graettinger, and Capt. Ashton Graybiel, CIRCULATION, X:384-400, September, 1954.

Ninety-six per cent of a group of 1,000 healthy aviators whose electrocardiograms were analyzed in 1940-1942 were traced after an interval of at least 10 years.

Two hundred and two men had died. Trauma caused 193 deaths, disease seven, and the cause was unknown in two. Only one man died of heart disease (myocardial infarction); his electrocardiogram had been normal in 1941.

Seven hundred and three men were reexamined and only four were found to have objective evidence of heart disease: one had coronary heart disease with myocardial infarction; two had hypertensive heart disease and one had chronic cor pulmonale. Eight other men showed enlargement of the heart by x-ray examination, without other evidence of heart disease. Twelve others had blood pressures greater than 145/95 mm.Hg. with otherwise normal findings.

In 639 men the 1940 and 1950 electrocardiograms were subjected to statistical analysis.

The effect of change in heart rate, age, weight, and blood pressure on these electrocardiographic measurements is discussed. On the basis of these findings ranges of normal are proposed which vary only slightly from those suggested by other authors.

Certain unusual cases were not included in the statistical analysis but are described briefly. These include two instances of the Wolff-Parkinson-White syndrome, two instances of complete right bundle-branch block, and one instance of complete left bundle-branch block.

There was a wide range of measurements of the electrocardiograms of these healthy men but in the individual cases the change over a

10-year period was relatively slight. This was true both for the normal electrocardiograms and for those which fell in the borderline zone between normal and abnormal.

Interpersonal Relationships in Dietetics

Roy Brener, J. AM. DIETET. A., 30: 872-875, September 1954.

In this paper the author deals with the problems of interpersonal relationships in dietetics. Emphasis is on the interrelationships of the dietetian with three main groups: (a) the patient or client, (b) other professional workers, and (c) nonprofessional personnel. Specific examples are given of problems in all these areas. In addition, a common core to many of these problems is suggested. A method of approaching these common problems is also recommended.

Finally, the view is presented that it is possible to develop attitudes and understanding that will facilitate good interpersonal relationships and that will make the work of the dietitian a successful professional performance as well as a gratifying personal experience.

The Articular Surfaces of the Sacro-iliac Joint and Their Relation to the Movements of the Sacrum

H. Weisl, ACTA ANAT., 22:1-14, 1954.

In a recent radiographic study of the sacroiliac joint in the living, its movements were found to be incompatible with the accepted description of the articular surfaces. This investigation was undertaken therefore to determine the exact conformation of the surfaces and to correlate their shape with the observed movements of the sacrum.

Using cartographic methods the articular surfaces of 62 sacroiliac joints were examined. The surfaces are proportionately longer and narrower on the sacra than on the ilia. The shape of the ventral border is related to the sacral curvature and to the slope of the ala. The concavity of the dorsal border is more marked in females and changes with age.

The sacral surface consists of two main elevations, a cranial, on some part of the lateral aspect of the first sacral vertebra, and a caudal, which is less prominent. These two elevations are separated by a saddle-shaped depression in young subjects. The sacral articular surfaces are hollowed out dorsal to both the cranial and caudal elevations. The iliac surfaces are reciprocally shaped, but the two surfaces are not exact mirror images.

Aging leads to an increase in the size of the elevations and depressions on the articular surface, and the formation of a large elevation near the dorsal border and several smaller ones on the ventral margin.

The relation of movement and structure in the sacroiliac joint is discussed and the present account of the articular surfaces is compatible with the movements of the sacrum observed in the living.

Psychological Factors in the Scientific Process

Edwin G. Boring, AM. SCIENTIST, 42:639-645, October 1954.

Professor Boring of the Department of Psychology, Harvard University, discusses the scientific process as a human activity significantly affected by individual bias or the "personal equation." Boring begins by showing the degree to which the scientific process is partly observation and partly logic. The investigator either observes particular relations and arrives at a generalization by induction, or he begins with a generalization and deduces from it a testable relationship which he then submits to observation.

The paper is concerned with a discussion of the covert influences that affect the thinking of the scientist. Boring suggests that the originator of a new development in science may unconsciously appropriate materials from a common reservoir of knowledge which is the culture, the *Zeitgeist*, of his time.

More important, perhaps for physical therapy, is the author's discussion of the constraining influence of conventions of thought and unquestioned assumptions. These permeate the field to an extraordinary degree. Conant is credited by Boring to have said that "if a conceptual scheme is highly satisfactory to those who use it, neither a few old facts which cannot be reconciled nor a few new ones will cause the concept to be abandoned." Again and again progress halts because the correct next step contravenes some firmly rooted theory or belief.

Somatotyping by Physical Anthropometry

R. W. Parnell, AM. J. PHYS. ANTHROPOL., 12:209-240, June 1954.

A method is described of estimating Sheldonian somatotype in young men, age 17 to 24, by physical anthropometry. Since the measurements occupy only 5 minutes in the taking, the method is suitable for general clinical use, the result being available in the form of a profile during the clinical interview. Greater objectivity in somatotyping is obtained by tables of bone, muscle girth, and subcutaneous fat measurements for each height and ponderal index group. These tables provide a simple and reliable guide to dominance in all but a small percentage of persons who show reversal of dominance in trunk and limbs.

Agreement to half a unit was obtained in 90 per cent of all somatotype ratings between estimates by deviation chart and tables and estimates made by the long photometric method. Between estimates by deviation chart and tables and photoscopic estimates by expert somatotypists agreement to half a unit was found in 87.3 per cent.

Poliomyelitis and Hospitalization

Archibald L. Hoyne, ILLINOIS M.J., 106:123-128, August 1954.

Notwithstanding that millions of dollars have been spent in research the poliomyelitis problem becomes more complex year after year. It seems almost certain that the disease is spread in some other manner as well as by human carriers. The discovery of the Coxsackie virus and the finding of three types of poliomyelities virus have added confusion to the diagnosis. Moreover Rosenow is convinced the etiologic factor is a specific streptococcus while Scobey believes that a toxin can explain the symptoms and pathologic findings.

There is no specific remedy for the disease nor reliable prophylactic measures for its prevention. Isolation and quarantine have been fail-

ures for the control of epidemics. The author hopes that gamma globulin will prove to be of more value for prevention than seems likely at the present moment. Thus far poliomyelitis is still unsolved and remains uncontrollable. Therefore it is necessary to concentrate on the best treatment, which can be provided only in a hospital.

The accompanying tables in the article are self explanatory and the low fatality rates are a tribute to superior hospital care rendered by the nurses and physical therapists. The Cook County Chapter of the National Foundation for Infantile Paralysis also played an important role by supplying special equipment when needed and cooperated in every way possible.

The Spoken Word

Humphry Osmond, CANAD. M. A. J. 71:1:49, July 1954.

The Spoken Word was delivered at the inaugural meeting of the Saskatchewan Hospital Medical Luncheon Club, by Dr. Humphry Osmond, M.R.C.S., D.P.M., Physician Superintendent, the Saskatchewan Hospital, Psychiatric Services Branch of the Department of Public Health, Saskatchewan.

Dr. Osmond states that there are two sorts of scientific papers; those which are written primarily for reading in a journal and those which are intended to be spoken at a meeting. Since the written word and the spoken word are different methods of communication, he feels that it is unwise to use one in place of the other. "Reflect how very different a novel is from a stage play and you will see my point."

Lincoln's speech at Gettysburg is a famous example of unconventional oration. By its gemlike, compact brilliance and good sense it shone out against the windy verbiage of his northern contemporaries. Their vaporings which lasted several hours were forgotten as soon as they were spoken. Those two minutes for which Lincoln spoke became immortal.

It is easy to be vague, wordy and platitudinous but hard to be pointed, brief and original. It is not beyond anyone to say what he has to say in brief, simple, direct language and then sit down. To do so, however, requires much preliminary work on the script combined with the self-discipline and resolution to stick to it when the time comes.

The author suggests that by your words and manner you should hint at something savory to come, without however, telling everything. Summaries come at the end and not at the beginning. You may consider that there is something hucksterish about such tricks, but men are not less curious because they are scientists and it is wise to gratify this human weakness.

You may feel that a scientific paper is not a drama or a television item, but Dr. Osmond believes that here you strike the weakness of most papers. Great wits are careful to rehearse adequately.

The author concludes with the following excellent advice: "Your paper should come with a summary underlining all that you have said. Don't hedge; science is served best by those who are prepared to sacrifice their ideas as targets for the criticism of others, and by this hard process the new hypothesis is either confirmed or refuted. If you do not tell people where you stand, this necessary end can never be achieved. When you can manage it, your paper should end with a punch line, a phrase rounding off the whole, a little flourish before the curtain falls, to remind your audience that medicine is still a learned profession and also an art."

Conceito Moderno Da "Doenca De Duplay"

J. P. Marcondes de Souza, ARQ. NEURO-PSIQUIAT., SAO PAULO, 12:249-258, Setembro 1954.

The author tries to demonstrate that the term "periartritis" created by Duplay is improper, since this disease is generally part of several different lesions only. After brief considerations on anatomo-physiology of the shoulder, the author summarizes the lesions of shoulder as follows: 1) tendinitis of supraspinatus and subdeltoid bursitis; 2) rupture of supraspinatus tendon; 3) lesions of the long tendon of biceps; 4) formation of periarticular adherences, "frozen shoulder."

He studies each group from its pathogenic, clinical, and therapeutic point of view emphasizing the importance of procaine injection, anesthetic test, surgical exploration by the transacromial via, and physical therapy.

Book Reviews . . . . .

Aphasia Therapeutics. *By Mary C. Longerich, Ph.D. and Jean Bordeaux, Ph.D. Foreword by Harold Rosen, Ph.D., M.D., and Fred B. Moor, M.D. Cloth. Price $3.75. Pp. 185 . The Macmillan Company, New York, 1954.*

The problem of aphasia is extremely complicated and a good understanding of its therapy is difficult to achieve. In the space of a small book the authors have attempted to bring order out of chaos. For the most part the presentation is as simple as it can be; for example, the introductory chapter gives a good account of the history and terminology.

In the section on symptomatology the authors rightly point out the need to know the patient and his psychological capacities so that it may be the basis for determining procedures and goals in therapy. Then in outline form are the highlights of receptive, expressive, and amnesic aphasia. There is no question about the accuracy of the descriptions but to this reader the mass of details became more confusing than clarifying even though he has considerable clinical experience with such cases. It must require great experience and skill on the part of the therapist to master the details as presented. The remainder of the book which really deals with therapy is very well done. Details are given of how to appraise the patient's capacities and then to proceed with specific treatment. The authors are to be complimented for the way in which they stress the need for psychological orientation to such patients because on this depends success or failure.

There are some statements in the book which are open to challenge when the authors depart from their primary field of interest. For example, on page 10, "It is never amiss for the therapist to insist that a referred patient be checked with the electroencephalograph. Aphasia often shows up in epileptics, neurotics, alcoholics, psychotics, and those who have had some cerebrovascular accident. This condition may be indicated by dysrhythmia re-

vealed in an electroencephalogram." Surely, they do not mean what they imply, namely, that this is the way one makes a diagnosis of such conditions. Nor should it be within the province of the therapist to have to make such a differential diagnosis. The same error is found on page 62 when the therapist is placed in the position of making a differential diagnosis between organic and psychological disease. There is no doubt that his skills are sometimes helpful in such cases but the final answer must come from the clinical neurologist.

It is not intended that these criticisms should detract from a useful contribution to a difficult subject. It is recommended for reading by anyone dealing with patients who have organic brain disease.

Child Health And The State. *By Alan Moncrieff, M.D., C.B.E., F.R.C.P. Nuffield Professor of Child Health, University of London Hospital for Sick Children, London. Cloth. Price $1.50. Pp. 48. Oxford University Press, New York, 1953.*

The book, *Child Health and the State*, is a compilation of the three Newsholme Lectures given by Dr. Alan Moncrieff in 1953. In the lectures Dr. Moncrieff examines the responsibility of the British Government in infant welfare, school health, and for the deprived child. He indicates how much more needs to be done by governmental authorities, private physicians, educators, and parents in order to provide complete health services to children.

The first lecture deals with infant welfare clinics in which Dr. Moncrieff stresses the importance of preventive services and treatment. He makes a strong plea for home visiting by physicians and nurses as an important unmet need.

The second lecture on School Health points out ways the school physician can improve health services for the handicapped as well as the nonhandicapped child. Dr. Moncrieff believes that school physicians should take a more active part in the school activities. He states that school physicians "should be concerned with the programme for physical education and the related field of remedial gymnastics." He further states that "there is evidence that much unnecessary physiotherapy is being used for children with so-called postural defects which in fact are often physiological variants during the growth process." He believes that school physicians should be interested in such things as ventilation, school lunches, lighting, desks, seats, playgrounds, and recreation after school. Definite recommendations are made for extension of health services for handicapped children, especially for the blind, deaf, diabetic, mentally defective, emotionally disturbed, and the child with cerebral palsy. In all aspects of school health, Dr. Moncrieff feels that there must be a close association between the school and the parents. The parents should be helped to accept their responsibility, ". . . to face the problems which illness and handicap bring and to seek the best solution in the child's interest."

The third lecture on the deprived child does not present the clear-cut solutions as did the previous ones and would be of little interest to physical therapists.

Dr. Moncrieff concludes the lectures by reemphasizing the importance of home-care programs as a means of strengthening the family unit.

This book would be of particular interest to physicians, nurses, and physical therapists in school health and crippled children's programs.

Corrective Physical Education. *By Josephine Langworthy Rathbone, Ph.D., Associate Professor of Health and Physical Education, Teachers College, Columbia University. Fifth Edition. Cloth. Price $4.50. Pp. 318. Illus. W. B. Saunders Company, Philadelphia, 1954.*

This is the fifth edition of this excellent textbook by Dr. Rathbone. While the same basic principles and purposes as advanced in the field of corrective physical education in the past remain the same, in the fourth and present addition, the author has expanded the text to include the role of the specialist in corrective physical education in rehabilitation as well as in the diagnostic and therapy phases of medical practice. The author has stated that corrective physical education is now being called upon, in hospitals and rehabilitation centers as well as schools, by internists, neurologists, psychiatrists, cardiologists, pediatricians, and leaders in geriatrics and in physical medicine

The section devoted to exercise in medicine presents the three general purposes of exercise or activity prescription as: psychological, physiological, and kinesiological and proceeds to describe pathological conditions and the methods by which these general purposes may be accomplished by the physical educator.

It is accepted that the present day specialist in corrective physical education should be technically well trained in anatomy, physiology, mechanics of movement, and psychology as well as possessing an appreciation of the intellectual, sociological and cultural needs of the person being exercised. In addition, as stressed by the author, the corrective physical education specialist must work under the close direction and in close harmony with the physician and the other members of the rehabilitation team. In the progressive schools and well organized rehabilitation centers this situation may be possible, but in the main this relationship between the physical educator and physician is nonexistant. In such situation, the physical educator in treating pathological conditions would be entering the field of specialized therapy for which he is not qualified. It appears to the reviewer that the field of corrective physical education as has been advanced in the past, should be expansive and challenging enough to encourage the physical educator to remain within its confines and allow the specialized therapies to be carried out by the qualified specialists in these fields.

The book provides a source of suggested exercises with complete and understandable descriptions which could be utilized by physical therapists as well as by physical educators under specific conditions. The early chapters likewise provide a brief review of anatomy, which as the author suggests, is meant only to refresh one who has had a good basic anatomy course.

Clinical Orthopaedics. Series No. 1. *Anthony F. DePalma, Editor-in-chief. Cloth. Price $6.00. Pp. 325; Illus. J. B. Lippincott Company, Philadelphia, 1954.*

The information in this book has been contributed by 29 orthopedic surgeons. The content is arranged in article form and divided in two major sections. Section I is con-

cerned with children's orthopedics, and Section II concerns general orthopedics.

The children's orthopedic section includes a discussion of arthritis, adolescent flared ribs, foot deformities in the newborn, posture in children, and other topics which are of interest to the physician and physical therapist. Dr. Garrett Pipkin's discussion on posture brings up many debatable questions which merit thought and consideration. The principles presented by Dr. Duncan McKeever concerning weight bearing defects in healthy children differ greatly from those presented in the same section by Dr. Charles Goff who writes about posture in children.

Section II of *Clinical Orthopaedics* contains an excellent article on the treatment of poliomyelitis based on the pathophysiology of the disease by Dr. Ned Shutkin. The remaining material in this section, although interesting, is not of particular help to the physical therapist.

The illustrations, roentgenograms, and charts, have been reproduced clearly. The paper is glossy; the type is easily read. With this book for reference, the physical therapist will realize the existing controversy regarding that which is considered as established therapy for conditions of questionable etiology.

Health Yearbook. *Edited by Oliver E. Byrd, Ed.D., M.D., Professor of Health Education and Director of Dept. of Hygiene, School of Education, Stanford University. Member of American School Health Association; American Public Health Association. Cloth. Price $3.50. Pp. 280. Stanford University Press. Stanford, California, 1953.*

Dr. Oliver E. Byrd, Ed.D., M.D., is a professor of health education and director of the Department of Hygiene, School of Education, Stanford University. He has had 21 years of teaching experience and is widely known as a school health consultant. Other publications by Dr. Byrd include *Patient's Self-History Form, Health Attitude Scale,* a student *Workbook for Health,* and nine previous *Health Instruction Yearbooks.*

Ever since 1943, Dr. Byrd has edited and compiled a Health Instruction Yearbook. He selects the most significant items from his readings of at least 1,500 reports. Among the most important source materials are the *Journal of the American Medical Association,* the *Congressional Record,* and the *American Journal of Public Health.* The present eleventh annual Yearbook is a well-indexed, ready reference to the latest developments in the health education field and should be of interest for all health educators, teachers, nurses, and therapists. Two hundred and eighty-one articles were abstracted from 101 different professional journals, special reports and other sources. These articles represent the research, experience, study, and thinking of well over 300 different authors, committees, and various health groups. With only a few exceptions all articles were published between July 1, 1952 and June 30, 1953.

The organization of the book is identical with the previous ten volumes; the title of the publication has been simplified to Health Yearbook. The subject material covered pertains to the broad aspects of health, including social implications, world health, safety, exercise, fatigue and rest, chronic disorders, and community health.

The Physiology of Man. *By L. L. Langley, M.A., Ph.D., and E. Cheraskin, M.D., D.M.D., University of Alabama, Birmingham. Cloth. Price $5.50. Pp. 609. Illus. McGraw-Hill Book Company, Inc., New York, Toronto, London, 1954.*

This text simplifies the various phases of physiology in such a way that it will secure the interest and enthusiasm of the average student in physical and occupational therapy courses. The authors have purposely omitted references because the fundamental concepts of physiology are given in an understandable way and also in a way that will arouse in many students a desire for further information. This desire will cause many to think and to study other views on various subjects of their own volition.

The text includes in good detail the parts of physiology such as respiration, circulation, muscle contraction, etc., which are of prime importance to students of occupational and physical therapy courses. The illustrations are of definite value in clarifying important points.

Apparently the goal of the authors was to present physiology so that the study of it would be fun. In their interesting and different approach, they have accomplished this goal.

This is an excellent text for physical and occupational therapy students.

Physics for Medical Students. *By J. S. Rogers, B.A., D.Sc., F. Inst. P., Dean of Graduate Studies, University of Melbourne, Melbourne, Australia. Third ed. Cloth. Price $5.50. Pp. xiii, 405; illus. 22. Cambridge University Press, New York. Bently House, London; Melbourne University Press, Carlton, N.3 Victoria, 1953.*

Dr. Rogers' aim in writing this text was "to create an interest by illustrating the principles of physics with applications to physiology and medicine" and to give fuller treatment to parts of the subject which are of importance to medical graduates, particularly to those "interested in research where physical principles are involved." The author devotes the first two chapters to the history of physics and outlines historical developments in succeeding chapters. He assumes a background in basic physics and a working knowledge of mathematics.

In some chapters (e.g. Surface Phenomena) when he discusses a phenomenon of physics, his approach is almost exclusively that of the physicist, and the medical application gets cursory treatment. In other chapters, the emphasis may be reversed, (e.g. Measurement of Body Temperature) when he discusses a medical application but provides only a brief, elementary account of the physics background. This inconsistency of approach, together with some noticeable omissions and uneven treatment of what is included, comprise the main faults of the book.

To the Third edition, new chapters have been added on electrons and thermionic values, electron microscope, cosmic rays, and photoelectricity but there are important omissions and some sections are out of date. Although material on electroencephalography has been added, electromyography is not mentioned. A discussion of microwaves is included in the chapter on high frequency currents, but the autocondensation couch is described as a current technic of diathermy application! Not mentioned at all are the various low frequency electrical wave forms employed therapeuti-

cally or for research, as in the study of cortical function. Also omitted are body mechanics and muscle physics and ultrasound, except for a statement in a historical chapter that it has been used to detect submarines and to measure the depth of the ocean.

There are other minor shortcomings of the book. The index is incomplete; for example, ultrasound is indexed as sonar (Sound Navigation and Ranging), an obscure listing for a medical text. The index reference to diathermy refers to a subtitle heading at the end of the chapter although diathermy had been discussed for six pages elsewhere under other headings. Some of the diagrams are not particularly effective. The references given in the bibliographies at the end of the chapters are generally old, and newer references, often incomplete, have been inserted in the text but not added to the bibliography.

There is a definite need for a medical physics text, and though there are chapters of merit in this book, it is not comprehensive enough to fill this need. Though it is not practical to compare this text with the volumes of "Medical Physics" edited by Glasser, the student and the research worker will undoubtedly find the latter more valuable.

The reviews here published have been prepared by competent authorities and do not represent the opinions of the American Physical Therapy Association.

Our Book Reviewers for January

Clara Arrington, Physical Therapy Consultant, Children's Bureau, Department of Health Education and Welfare, Washington, D. C.

J. Leonard Goldner, M.D., Associate Professor Orthopaedic Surgery, Duke University School of Medicine, Durham, N. C.

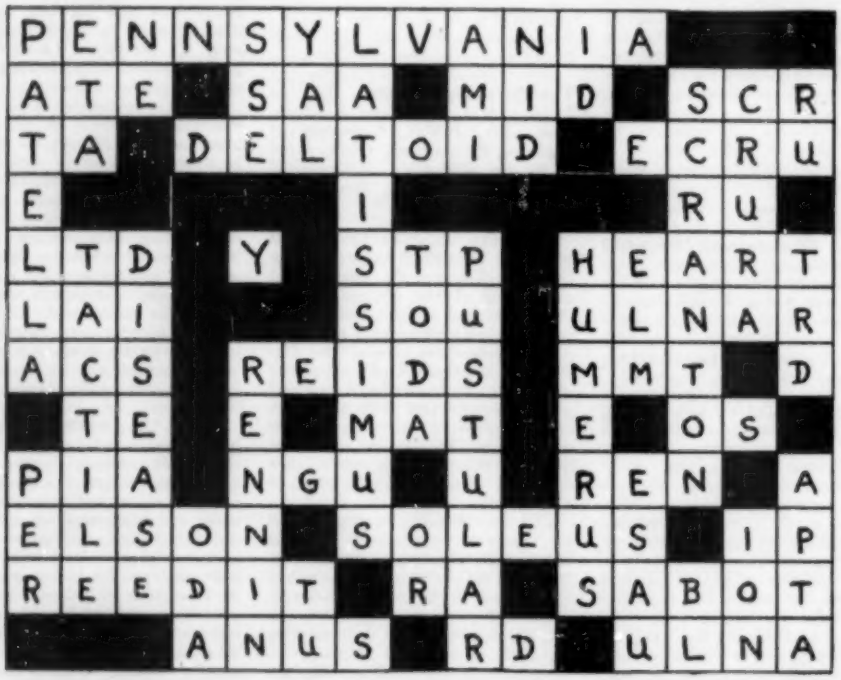
Mrs. Rexie K. Morris, Associate Professor, Physical Therapy Department, University of Southern California, Los Angeles.

Emily E. Mueller, Arthritis Rehabilitation Instructor, Eastern Pennsylvania Chapter, Arthritis and Rheumatism Foundation, Philadelphia.

Lt. Col. Agnes Snyder, Assistant Chief Women's Medical Specialist Corps, Office of The Surgeon General, Washington, D. C.

Irving C. Sherman, M.D., Assistant Professor of Nervous and Mental Diseases, Northwestern University Medical School, Chicago.

Janet A. Wessel, Assistant Professor, College of Physical Education, Recreation and Health, University of Maryland, College Park.



Solution to the Crossword Puzzle by Herbert Jones which appeared in the December *Physical Therapy Review.*

Classified WANT-ADS

WANTED: EXPERIENCED physical therapist (female) for 250-bed hospital and a small well equipped emergency polio center. Good salary; hours from eight to four; paid vacation and sick leave; and Social Security. Definite opportunity for advancement. Apply to Mr. Freeman May, Administrator, Baptist Hospital, Alexandria, Louisiana.

WANTED IMMEDIATELY IN FLORIDA: Experienced physical therapist to set up and operate new outpatient clinic in conjunction with County Medical Center. Excellent starting salary and opportunity for advancement. Apply H. W. Craig, President, Duval County Society for Crippled Children, 430 W. Monroe St., Jacksonville, Fla.

QUALIFIED PHYSICAL THERAPIST needed for staff position in children's orthopedic hospital. State registration required. Good salary, maintenance optional; 15 days' vacation; 15 days' sick leave, 40-hour week. Contact Dr. W. L. Minear, Chief Surgeon, Carrie Tingley Hospital for Crippled Children, Truth or Consequences, New Mexico.

WANTED: PHYSICAL THERAPIST to coordinate Crippled Children's Program through Visiting Nurse Agency clinic and special school. Also to give consultation to nurses regarding patients in homes. Five-day week, sick leave, month's vacation. Write: Visiting Nurse Society of Canton, 1026 West Tuscarawas Street, Canton 2, Ohio.

IMMEDIATE OPENING for physical therapist in 227-bed general hospital. Apply: Assistant Administrator, St. Mary's Hospital, Racine, Wisconsin.

CHIEF PHYSICAL THERAPIST for 100-bed children's hospital with Medical School affiliation. Salary open. Write to Dr. Hilda Case, Division of PM & R, University Hospitals of Cleveland, Cleveland, Ohio.

PHYSICAL THERAPIST to treat patients in a well equipped office in a professional building. Staff: 6 physical therapists, 1 aide, 1 secretary. Starting salary dependent on experience. Five-day, 40-hour week, 3 weeks' paid vacation, social security, insurance (Blue Cross and Blue Shield available). Apply to Henry O. Kendall, 2 East Read Street, Baltimore 2, Md.

THE MAY T. MORRISON CENTER for REHABILITATION, 1680 Mission St., San Francisco, Calif., invites applications from qualified physical therapists interested, and preferably with experience in rehabilitation.

REGISTERED PHYSICAL THERAPIST, full or part-time. Rehabilitation Center for the Physically Handicapped, Inc., 20 Wall Street, Stamford, Conn. 4-9563.

POSITION: Physical therapist for new cerebral palsy center. If person has had sufficient experience, directorship will be open also. Apply to Mrs. Thomas Owen, Amarillo Cerebral Palsy Center, Amarillo, Texas.

PHYSICAL THERAPIST NEEDED in 100-bed completely modern hospital. Contact Reed B. Hogan, Administrator, Coahoma County Hospital, Clarksdale, Mississippi.

IMMEDIATE OPENING for experienced female physical therapists, to direct small outpatient clinic associated with two private hospitals. Salary open; paid vacation; sick leave; forty-hour week. Contact: W. E. Robbins, Box 697, Wilson, N. C.

THERAPIST: Qualified both physical and occupational for expanding department in new 242-bed hospital. General work with in- and outpatients. Future possibility of opening occupational department. Write Donald Wasson, Physical Therapy Department, Parkview Memorial Hospital, 2200 Randalia Drive, Fort Wayne, Indiana.

FOR OPENINGS in physical therapy in the State of Virginia, contact: Mr. Ivan C. Kline, Placement Service Chairman, Va. P. T. Assoc., Inc., 3822 Maury Street, Richmond 24, Virginia.

QUALIFIED PHYSICAL THERAPIST (woman). Excellent professional opportunity. Private Rehabilitation Center, North Suburb of Chicago. Wide variety of patients. Children and adults. Salary dependent upon ability and qualifications. Write Dorothy M. Dean, Winnetka Rehabilitation Center, 60 Green Bay Road, Winnetka, Illinois.

WANTED: QUALIFIED PHYSICAL THERAPIST for outpatient clinic treating multiple sclerosis and allied diseases. Five-day week. Salary schedule designed to attract the best. Good opportunity for research. Contact Gabriel Steiner, M.D., Medical Director, Michigan Multiple Sclerosis Center, 1420 St. Antoine, Detroit 26, Michigan.

CHARITY HOSPITAL, NEW ORLEANS 12, Louisiana. Openings for 2 staff physical therapists; 40-hour week; civil service appointment. Write: Physical Therapy Department.

Classified WANT-ADS

RATES

The rate per insertion is 75c per line. Typewrite your advertisement carefully and count 50 characters and spaces per line.

ALL WANT-ADS MUST BE PAID FOR IN ADVANCE. Make checks or money orders payable to the American Physical Therapy Association.

Closing date for copy and cancellations is two months preceding publication date.

Institutions or physical therapists who do not wish their identity known may arrange for Blind Ad Code No. All such want-ads must include the following which will be counted as 2 lines:

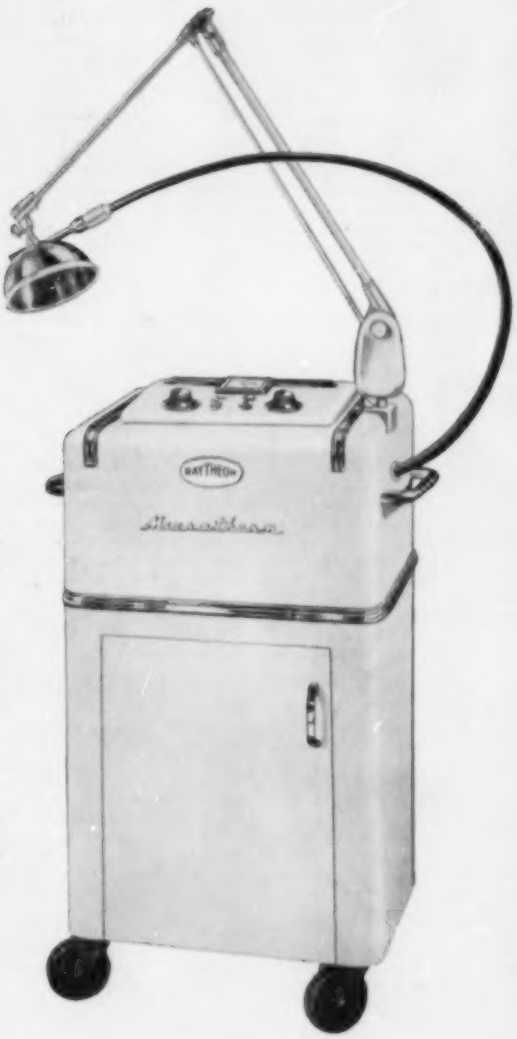
Address replies to ..... care of The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

IMPORTANT

It is understood and agreed that the publisher shall have the right to reject or change the wording of any advertisement which in the opinion of the Editorial Board shall not be in agreement with the ethical standing of this publication.

the most widely used Diathermy—now better than ever

INTRODUCING NEW 1955 RAYTHEON MICROTHERM®



new...Functional design in a trim, sleek cabinet with streamlined operating panel.

new...Safety monitors that prolong life of parts: automatic shut-offs protect equipment, prevent errors.

new...Warranty of two full years on all parts—a guarantee of reliable quality and craftsmanship throughout.

and...
just in time to serve the broadening range of new Raytheon Microtherm applications now being reported in professional papers.

Ask your medical equipment dealer to demonstrate the new Raytheon Microtherm, Model CMD-10.

Excellence in Electronics RAYTHEON

RAYTHEON MANUFACTURING COMPANY
Microwave and Power Tube Operations, Waltham 54, Massachusetts